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THE MECHANISM OF SHOCK AND EXHAUSTION

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The man in acute shock or exhaustion is able to see danger, but lacks the normal muscular power to escape from it; his temperature may be subnormal, but he lacks the normal power to create heat; he understands words, but lacks the normal power of response. In other words, he is unable to transform potential into kinetic energy in the form of heat, motion and mental action, despite the fact that his vital organs are anatomically intact. His mental power fades to unconsciousness; his ability to create body heat is diminished until he approaches the state of the cold-blooded animal; the weakness of the voluntary muscles finally approaches that of sleep or anesthesia; the blood pressure falls to zero; most of the organs and tissues of the body lose their function.

It is evident, therefore, that in exhaustion the organism has lost its self-mastery. Self-mastery is achieved only by the normal action of the master tissue—the brain. In exhaustion, then, is the brain primarily exhausted; or has some other tissue or organ functionally broken down, and has that breakdown carried with it exhaustion of the brain? If the latter is the case, then what organs and tissues are vitally necessary to the brain for the performance of its function? Obviously, the exhaustion of any organ or tissue not vital to the performance of brain function need not be considered, since it probably would not be a direct cause of acute exhaustion.

I. Tissues and Organs Which Bear No Immediate Relation to the Problem of Acute Exhaustion

Among the tissues and organs that are not immediately vital to the brain within the period of death from *acute* exhaustion are the bones and joints, the connective tissue, the neutral fats, the skin, the genito-urinary system, the digestive system, the gallbladder and ducts, the lymphatic vessels and glands, the salivary glands, the spleen, the sweat glands, the pancreas, the thyroid, the thymus, the organs of common sensation, the nails, the hair. Want of activity of any of these organs or tissues individually or collectively cannot produce acute exhaustion in the sense in which that word is here used. That is to say, a man in exhaustion from the injury and the struggle of battle would not be restored if he were given rested eyes, rested ears, rested sweat glands, rested spleen, rested genito-urinary system, rested digestive system, rested bones and joints, rested connective tissue, rested skin, rested gallbladder, rested fat.

II. Tissues and Organs Whose Failure of Function May Produce Acute Exhaustion

The tissues and organs whose failure of function may cause acute exhaustion are the respiratory system, the circulatory system, the blood, the muscles, the suprarenals, the liver and the brain.

RESPIRATORY SYSTEM

Relation of the Respiratory System to Shock and Exhaustion.—The failure of the respiratory system to deliver sufficient oxygen to the blood or to take sufficient carbon dioxid from the blood exhausts and kills promptly. Failure of the respiratory system is not a universal, not even a common, cause of exhaustion, for in the great majority of cases of exhaustion, the respiratory activity is even increased and there is no interference in the lungs with the exchange of gases. The interference with the pulmonary mechanism of air exchange that may cause exhaustion is most commonly produced by edema of the alveolar walls; by pulmonary embolism; by the exudations of pneumonia; by fat embolism; by the inhalation of water or of pus or of free blood; by excessive pleural effusion; by emphysema, and by hemothorax and pneumothorax. In each of these conditions, there is interference with the intake of oxygen and the elimination of carbon dioxid which may be sufficient to cause exhaustion and death.

Theories Regarding the Relation of the Respiratory System to Shock and Exhaustion.—Fat Embolism Theory: Roswell Park [1] first suggested, and Bissell [2] demonstrated, the presence of fat embolism in the lungs of patients who were diagnosed as being in surgical shock. Porter [3] has extended Bissell's observations into an inclusive theory of shock. He concludes that shock is due mainly to diffuse fatty embolism of the lungs. There are several facts that apparently are not harmonized by the fat embolism theory:

(*a*) In cases of abdominal penetration, if there is no perforation of the hollow viscera and no hemorrhage, there is little shock; if there is either perforation or hemorrhage, or both, there is shock. Since, in either case, the same fat areas have been traversed, it follows that the traversing of the fat was not the determining factor.

1. Park, Roswell: New York M. J. **40:** 177-181, 1884.
2. Bissell, W. W.: The Amount of Fat in the Blood Stream of Persons with Broken Bones, J. A. M. A. **67:** 1926 (Dec. 23) 1916; Surg., Gynec. & Obst. **25:** 8-22, 1917.
3. Porter, W. T.: Boston M. & S. J. **176:** 248 (Feb. 15) 1917; **176:** 326-327, 1917; New York M. J. **106:** 894-895 (Nov. 10) 1917; Proc. Inst. Med. **2:** 24-29, 1918.

(*b*) In emotional shock, so common in battle, it is difficult to assign to fat emboli a causative rôle.

(*c*) In shock from burns, the difficulty is no less.

(*d*) In shock from chest and head injuries, it is almost as difficult to assign a causative rôle to fat emboli. Many other examples may be cited.

On the other hand, surgical literature contains many accounts of the presence of fat emboli in fracture cases, especially in fractures of the long bones; and these cases show no shock at first, but later develop a train of symptoms resembling shock.

Wiggers [4] performed a series of experiments to determine whether the mechanism which causes failure of the circulation after the intravenous injection of oil is the same as that which causes circulatory failure in surgical shock. He concluded that circulatory failure produced by fat emboli must be distinguished from circulatory failure due to surgical shock. The conclusions of Wiggers are in more complete accord with surgical experience than those of Porter. With respect to the carbon dioxid treatment which Porter proposes,[5] on the theory that the increased action of the diaphragm caused by the carbon dioxid would force the fat emboli out of the capillaries into the free circulation, it would obviously be difficult to determine how much of the clinical result might be due to pooling of the blood in the abdominal veins, for which Porter advises carbon dioxid inhalation, and how much to pulmonary fat embolism, for which also he advises carbon dioxid inhalation. That is, would the clinical result be due to the pumping of the blood out of the abdominal vessels by the increased respiration induced by the inhalation of carbon dioxid, or to the driving of the fat out of the lungs, or would it be due to the relief of acapnia (Henderson [6])? But since in practice the carbon dioxid treatment has yielded no advantage to the patient, this point will not be pursued further.

Henderson's Acapnia Theory: Yandell Henderson has plausibly advocated the view that excessive ventilation of the lungs—resulting in excessive elimination of carbon dioxid from the blood—is the cause of shock. Since the respiratory center is controlled largely by the carbon dioxid tension of the blood, it follows that in shock the respiratory exchange would be diminished, so that, as Henderson believes, there would result a state which is below the point of oxygen safety.

Henderson's theory is one which every surgeon would hope might be true, for apparently it would make both the prevention and the cure of shock easy and simple. There are many arguments in favor of this theory. The disturbing effect of excessive ventilation of the lungs is apparent. It is true that oxygen improves the condition of the patient in shock, that lack of oxygen leads to acidosis. Nevertheless, there are certain difficulties in the way of accepting fully Henderson's conclusions.

(*a*) As stated above, the clinical use of carbon dioxid in shock has not proved to be of much value. It is possible that this is due to the fact that serious intracellular damage has been inflicted on certain of the vital organs before the carbon dioxid treatment was begun.

(*b*) In my laboratory, animals under curare and continuous, adequate and even artificial respiration—thus eliminating the excessive ventilation (acapnia) factor—could still be killed by shock from trauma.

(*c*) Protracted consciousness—insomnia—in animals subjected to no other excitement causes complete exhaustion. Acapnia could scarcely be a factor here. It should be added that Henderson has not discussed this type of exhaustion.

Conclusion.—In exhaustion from running, from fevers, from trauma, from anesthesia, from excision of the liver, from excision of the suprarenals, from hemorrhage, from emotion, from insomnia, the exhaustion is not in any way related to the lungs. If there is a coexistent defect in the pulmonary function, so much the more readily is exhaustion produced by trauma, by emotion, by fever, by exertion, by hemorrhage, etc. We therefore conclude that the primary cause of exhaustion may be found in the *pulmonary system, but that this is not a common primary cause.*

CIRCULATORY SYSTEM

Failure of the circulation exhausts and kills inevitably, and failure of the circulation is established sooner or later in acute cases of grave or fatal exhaustion. This, therefore, is the question: Is the failure of the circulation a primary or secondary cause of exhaustion, or is the circulatory factor sometimes a primary and sometimes a secondary cause of exhaustion?

The Heart.—The heart may be unable to pump the blood stream forcibly enough to maintain adequate circulation, in which case general exhaustion will occur as the result of lack of oxidation of the tissues. Exhaustion occurs clinically in the myocarditis of acute or prolonged infections, as the result of excessive muscular exertion, in anemia, in the presence of valvular defects. But observations in both the clinic and the laboratory show that in surgical shock and exhaustion, the heart muscle has not failed.

Distribution of Blood.—Pooling in the Larger Veins: A number of observers have held the view that in shock the blood accumulates in various blood vessels, this pooling becoming in effect an intravascular hemorrhage. There are certain facts, however, which are not harmonized by this theory:

(*a*) In my laboratory, experiments showed that shock could be produced in animals in which the abdominal vessels or the thoracic aorta had been excluded by ligation, though not quite as readily as in the controls. Erlanger and others [7] have shown that excision of all the abdominal viscera does not lessen the liability to shock. In our experiments, we found also that if the intestine was so tensely distended with water as to drive out all the blood, then trauma of the peritoneum no longer caused a primary fall in blood pressure, but death from shock might occur. Many dissections before death, and many necropsies after death from trauma to other parts of the body than the abdomen, showed that the blood was held in the veins everywhere, as in death from other causes.

(*b*) As stated in a preceding paragraph, Porter [8] has proposed the inhalation of carbon dioxid for the purpose of increasing activity of the diaphragm, to the end that the supposed accumulation of blood in the abdomen would thus be put into more active cir-

4. Wiggers, C. T.: Circulatory Failure: The Differentiation Between That Due to Shock and That Due to Other Causes, J. A. M. A. **70**: 508-511 (Feb. 23) 1918.

5. Porter, W. T.: Boston M. & S. J. **176**: 699 (May 17) 1917, and references in Footnote 3.

6. Henderson, Yandell: Am. J. Physiol. **21**: 126-156, 1908: **23**: 345-373, 1908-1909; **24**: 68-85, 1909; **25**: 310-333, 385-402, 1909-1910; **26**: 260-286, 1910; **27**: 152-176, 1910-1911; **46**: 533-553, 1918; Bull. Johns Hopkins Hosp. **21**: 235-240, 1910.

7. Erlanger, Joseph; Gesell, Robert; Gasser, H. S., and Elliott, B. L.: An Experimental Study of Surgical Shock: Preliminary Report, J. A. M. A. **69**: 2089-2092 (Dec. 22) 1917.

8. Porter, W. T. (Footnotes 3 and 5).

culation. No clinical advantage from this treatment has been reported.

(*c*) Treatment with intraperitoneal injections of pituitary extract, as suggested by Cannon, even more effectively facilitates the splanchnic venous circulation than does Porter's carbon dioxid inhalation, but this method has not proved to be a cure for shock.

From the evidence in hand, we are not warranted in concluding either that blood does or that it does not pool. We only infer that even of it does pool, this is an end effect—not a primary cause of shock.

Accumulation of the Blood in the Capillaries: Cannon [9] has advanced strong arguments in favor of the view that the smaller blood vessels—the capillaries—are dilated, and in dilating have engulfed so much of the volume of the blood as to interfere seriously with the circulation. If this were true, then the universal bandaging of the body alone, or blood transfusion alone, or bandaging and blood transfusion combined, should both prevent and cure shock. But both laboratory and clinical experience show that, although these measures are useful, they are not specific.

Vasomotor Mechanism.—Is the vasomotor mechanism a factor in shock? In 1897, I proposed the theory that shock was due to the impairment or breakdown of the vasomotor mechanism.[10] Owing to the fact that control of the blood pressure did not specifically cure shock, it soon became obvious that exhaustion and shock included much in addition to the failure of the vasomotor mechanism.

Opposing views as to the state of the vasomotor mechanism have been presented by various investigators:

(*a*) Seelig and Lyon [11] have concluded that the vasomotor mechanism is functionally intact in shock.

(*b*) Porter [12] has found that vasomotor stimulation produces a progressively diminished rise in blood pressure as shock deepens. This finding is in accord with our own data. Porter has interpreted the blood pressure change on the basis of a percental rise, and has concluded that the vasomotor mechanism is not altered in shock. It is open to question, however, whether Porter has not proved the opposite of his conclusions, for if, in shock, epinephrin be given intravenously, or pressure on a paw be made, the percental rise interpretation will be reversed. Applying Porter's percental interpretation to the effect of epinephrin, the rise would be more than 300 per cent.; that is, according to Porter's reasoning, the vascular state is three times better than normal, but nevertheless, the dog is dying. The error in Porter's reasoning may be made more clear by a homely illustration. If a goad be applied to a fresh horse, the resulting increase in speed may be stated as a percental increase. When the horse is in extreme fatigue and an equal goad is applied, the percental increase will probably be the same, but nevertheless the horse is exhausted.

(*c*) Erlanger and his associates [7] found that the vasomotor mechanism is exhausted late in shock. They suggest that the primary fall in blood pressure may be brought about by the effect of painful stimuli and hemorrhage.

(*d*) Pike and Coombs [13] believe that damage to the brain cells must be included as one of the conditions of traumatic shock.

(*e*) Wiggers [14] observed a steady fall in vasomotor tone in the early phases of shock. He concluded that the peripheral resistance was diminished, indicating diminished vasomotor tone.

Our experimental data show that there is no practical distinction to be made between external stimulation of the vasomotor center as in injury and operation, and internal stimulation by vasomotor stimulants, as strychnin. Each in sufficient amount produces exhaustion (shock), and each with logic might be used to treat the shock produced by the other. We conclude, therefore, that in traumatic shock the vasomotor mechanism is functionally impaired or exhausted.

Experience in the clinic, however, seemed to show that, whereas in shock the depression and fatigue of the vasomotor centers were very important, there must also be other important effects. This was all the more probable because of the time required for recovery; the long after-effects; the inadequacy of merely raising the blood pressure; the weakness and debility of the injured animal before a fall in blood pressure had occurred; and the facts that infection, loss of sleep, hunger and thirst predisposed to exhaustion and that ether anesthesia predisposed to exhaustion. All these clinical observations demanded renewed research. The work of Hodge on fatigue in bees and birds suggested such an investigation. To that end, the studies of the brain cells, which have been summarized in former publications, were undertaken. These studies immediately gave illuminating results. Our argument was that if the vasomotor center was fatigued in shock and exhaustion, other parts of the brain were probably fatigued also. If the brain cells were functionally altered, one would expect them to be physically altered, as Hodge had shown was the case in his studies of fatigue in the bee. We argued that in shock not only are the vasomotor cells exhausted, but the cells of the brain that preside over voluntary muscular action and mental action are also altered; in other words, that the brain as a whole is altered, and is altered independently of, as well as in consequence of, the low blood pressure due to the exhaustion of the vasomotor centers; that the higher centers may well be affected even more than the vasomotor.

The vasomotor mechanism alone, the blood pressure alone, is not sufficient to account for all the phenomena of shock; and although some of the causes of exhaustion may be found in the respiratory system, and some in the circulatory system, we must look elsewhere for the explanation of the vast majority of cases of shock and exhaustion. Are these due to some change in the blood?

The Blood.—Chemical Changes in the Blood: The blood is a vital fluid for all the tissues. If there is insufficient blood, or if the blood is sufficiently impure, exhaustion of every organ and tissue will follow. The acute exhaustion caused by hemorrhage is cured in a normal animal by immediate replacement of the lost blood by an equal amount of good blood from another animal. If impure blood is the primary cause of exhaustion, and no other primary cause exists, then the removal of impure blood and the substitution of

9. Cannon, W. B.; Fraser, John, and Hooper, A. N.: Some Alterations in Distribution and Character of Blood in Shock and Hemorrhage, J. A. M. A. **70:** 526-531 (Feb. 23) 1918.
10. Crile, G. W.: An Experimental Research into Surgical Shock, 1897.
11. Seelig, M. G., and Lyon, E. P.: Surg., Gynec. & Obst. **11:** 146-152, 1910; The Condition of the Peripheral Blood Vessels in Shock, J. A. M. A. **52:** 45-48 (Jan. 2) 1909.
12. Porter, W. T., and Storey, T. A.: Am. J. Physiol. **18:** 181-199, 1907.
13. Pike, F. H., and Coombs, H. C.: The Relation of Low Blood Pressure to a Fatal Termination in Traumatic Shock, J. A. M. A. **68:** 1892 (June 23) 1917.
14. Wiggers, C. J.: Am. J. Physiol. **45:** 485-499 (March) 1918; **46:** 314-328 (June) 1918.

pure blood should bring relief from exhaustion in proportion to the amount of impure blood exchanged for pure blood.

If exhaustion is due to some change in the blood, then if an acutely exhausted animal had its blood withdrawn as completely as possible and normal blood replaced, the same process being repeated several times so as to be certain that a sufficient amount of blood had been exchanged, demonstrable relief should follow. But experiments have shown that not many cases of exhaustion may thus be benefited or cured. Moreover, animals exhausted by insomnia show no change in the blood picture, as has been shown by our experiments. We have found, also, that in patients in whom exhaustion has developed gradually, there may be no change in the blood.

The common pathologic change in the blood in acute exhaustion is acidosis. If this were the primary cause of exhaustion, then infusion of sodium bicarbonate should prevent and cure; but both laboratory and clinical evidence shows that alkalis neither prevent nor cure shock.

Cannon [15] has found decreased reserve alkalinity in wounded soldiers in shock. He found that this decrease was more marked in operations under ether than in operations under nitrous oxid; he believes that a diastolic blood pressure of about 80 is a critical level at which acidosis rapidly develops. These phenomena are obviously secondary causes of exhaustion.

Cannon, Dale and Bayliss have recently found that the pulpefaction of muscles causes a fall in blood pressure when the nerve supply of the injured part is blocked, and that this is prevented when the circulation of the part is blocked. Even so, macerated muscle products could be only a minor factor in the production of shock, for (*a*) tourniquets minimize shock only as far as they minimize hemorrhage; (*b*) spinal and local anesthesia almost specifically prevent shock; (*c*) many causes of shock, such as abdominal operations, joint injuries, skin injuries, etc., have no relation to muscle poison, and (*d*) nitrous oxid anesthesia is all but a preventive of shock. How can these facts be reconciled with the view that the cause of shock is low blood pressure, the low blood pressure in turn being caused by muscle poisons? Even if under exceptional circumstances the presence of muscle toxins constituted a causative factor, their shock-producing value would be identical with that of toxemia from any other cause.

Concentration of the Blood: The blood volume is apparently diminished in shock. Has the plasma left the vessels and gone into the tissues? If so, is the process an adaptation or is it a pathologic effect? This point was investigated in our laboratory by Drs. F. W. Hitchings, A. N. Eisenbrey and C. H. Lenhart, who found that in shock the concentration of the blood was increased up to 20 per cent.; but other considerations made it obvious that this is not a primary cause of shock.

> In the blood of the "shock dogs" there was an increase in the red cells per cubic millimeter, while in the blood of the "hemorrhage dogs" there was a decrease in the number of red cells per cubic millimeter. . . .
>
> In the "shock dogs" there was a decrease in the number of white corpuscles, while in the "hemorrhage dogs" there was a preliminary decrease followed by a marked increase.[16]

Mann [17] conducted a more extensive research along the same line, and attributed greater importance to the increased concentration. Cannon [15] has shown further evidence of loss of plasma in shock, and supports Mann's estimation of the value of these data rather than ours. Now, if increased concentration were the cause of the small amount of blood, if circulatory failure were due to a "plasma hemorrhage" into the tissues, then adequate transfusion of blood should prevent and cure shock; but adequate transfusion of blood is not a specific cure. In addition, on this theory, the careful work of Hogan and Bayliss [18] on the infusion of colloidal solutions should have given us a cure, because it is known that these solutions do not leave the blood stream. But colloidal solutions fail to hold the blood pressure—fail to cure advanced cases. The transference of plasma is probably an adaptive protection.

Then, again, even granting that the blood contains impurities which cause exhaustion, where did the blood get those impurities? From the cells. And the cells? From their increased metabolism. What caused that increased metabolism? Certain of the excitants of exhaustion. We conclude, therefore, that in the absence of primary disease—causing changes in the blood, and in the absence of hemorrhage, changes in the blood or in the blood pressure are *secondary,* not a primary cause of exhaustion.

VOLUNTARY MUSCLES

If the voluntary system were exhausted primarily in shock, then there would be prostration, low temperature, lowered blood pressure, but not the extremely low blood pressure often seen in shock, no sweating, and no loss of mental symptoms. Therefore, it at once becomes apparent that primary exhaustion of the voluntary muscles could not be an adequate cause of *all symptoms of exhaustion.*

Is exhaustion of the voluntary muscles the cause of the lowered body temperature? Is the inability of the muscles to act due to a primary change in the muscles, while the brain is normal? This seems improbable, for the following reasons:

(*a*) To low blood pressure and anemia, the voluntary muscle is more resistant than the brain—more than fifty times as resistant (Crile and Dolley).

(*b*) The muscles in the acutely exhausted subject show no histologic change. They can be made to contract by electric stimulation of their nerve supply, or by electric stimulation of the muscle directly.

(*c*) It is a physiologic axiom that voluntary muscles are not as readily exhausted as are the nerve centers that govern them.

(*d*) If there is primary exhaustion of the muscles, then, according to Bayliss, it would probably be due to the overproduction of acid or other injuring by-products as a result of injury or of work performed. But in exhaustion from trauma under anesthesia, the muscles have done no work; in exhaustion from fear, the muscles have done little work; in exhaustion from overwhelming toxemia, there has been no muscular work. Finally, we know that in a vast number of the injuries which cause shock, no muscle is involved; for example, injury of the skin, of the brain, of the knee-joint, of the hands or feet may result in shock.

15. Cannon, W. B.: Acidosis in Cases of Shock, Hemorrhage and Gas Infection, J. A. M. A. **70**: 531-535 (Feb. 23) 1918.
16. Crile, G. W.: Hemorrhage and Transfusion, 1909, pp. 82, 83.
17. Mann, F. C.: Further Experimental Study in Surgical Shock, J. A. M. A. **71**: 1184 (Oct. 12) 1918.
18. Bayliss, W. M.: Intravenous Injection in Wound Shock, London, 1918.

We must therefore conclude that the voluntary muscular system plays a secondary, not a primary rôle in exhaustion. We have seen that the respiratory and the circulatory systems and the voluntary muscular system are sometimes primary causes of exhaustion, and frequently secondary causes. We have seen that in exhaustion all these tissues suffer a variable amount of disability; but the primary common cause of shock remains to be disclosed.

THE SUPRARENALS

The criteria for the objective study of the suprarenals are epinephrin output, the electric conductivity and the histologic picture. Elliott,[19] Cannon [20] and others have found an increased epinephrin output and a diminished epinephrin content in certain cases of exhaustion, for example, in exhaustion due to inhalation anesthesia, to infections, and to emotion. Short [21] found no notable diminution in the epinephrin content in shock; Bedford [22] found no diminution of epinephrin output in shock; Mann [23] dissociates the suprarenals from shock. In our laboratory we found cytologic changes in the suprarenals in exhaustion from any cause, including insomnia, these changes being more marked in the cortex than in the medulla.

Relation of Suprarenals to the Liver and to the Brain in Exhaustion.—Apparently epinephrin alone can cause the brain greatly to increase its work. By cross-circulation experiments, we have found that epinephrin causes increased activity of the central vasomotor mechanism. Not only can epinephrin, as Cannon has shown, cause all the basic phenomena of exertion, emotion, infection, etc., but it also causes brain cell lesions identical with those produced by exertion, emotion, infection, etc., including the entire cycle of hyperchromatism, chromatolysis, swelling and even disintegration of the brain cells. The injection of epinephrin causes an immediate increase in the conductivity of the brain to above the normal, followed by a later decrease to below the normal; moreover, epinephrin causes an immediate increase in the temperature of the brain, as evidenced by thermocouple measurements. We know that when the suprarenals are excised, the brain cells undergo a progressive cytolysis; and there is no primary stage of hyperchromatism, but an immediate and progressive chromatolysis, edema and final breakdown.

From these facts, it would appear that the brain is profoundly, even vitally, dependent on the suprarenals; that without the suprarenals, the brain rapidly loses not only its functional power, but also its power of survival. How is the influence of the suprarenals on the brain exerted? Is it the result of direct action of epinephrin on the brain cells? Does epinephrin owe its effect on the brain cells to the resultant formation of an increased amount of oxyhemoglobin in the lungs, which was demonstrated by Dr. Menten; [24] or to its power of increasing the alkalinity of the blood? Or does epinephrin owe its remarkable effect on the brain cells to an intermediate effect on some other organ, such as the thyroid (Aschoff, Cannon) or the liver?

That the suprarenals exert also a vital influence on the liver has been demonstrated by the cytologic changes produced by the intravenous injection of excessive amounts of epinephrin — chromatolysis, edema, displacement of nuclei, loss of the power of differential staining. Similar cytologic changes in the liver cells follow double suprarenalectomy. When the liver cells are thus altered, from whatever cause, the brain is unable to do its work normally, and becomes exhausted. Assuming that the *absence* or the *excess* of epinephrin causes changes in the cells of the brain and the liver characteristic of exhaustion, then does epinephrin produce these changes in the brain cells *primarily* by acting directly on the brain, or *secondarily* by first acting on the liver? It is known that epinephrin facilitates oxidation; hence it facilitates energy transformation, and, therefore, the internal respiration of the cells of each organ would be speeded up by the presence of epinephrin and diminished by its absence. The brain, being dependent on the functional integrity of the liver, and the liver being dependent in part on the suprarenals, and each being dependent on oxidation, which in turn is, in part at least, dependent on the suprarenals, we must conclude that the liver and the brain are dependent not only on each other, but on the suprarenals as well.

We may conclude, therefore, that the suprarenals are factors in the primary cycle of exhaustion, though their rôle cannot be accurately defined.

THE LIVER

Is the primary cause of exhaustion to be found in the liver? That the liver is necessary to the functional activity of the brain is proved by the following data:

(*a*) After excision of the liver, the power of the brain to drive the organism, to transform potential energy into kinetic energy, such as heat or muscular or mental action, is rapidly diminished and completely lost at the time of inevitable death, usually within a few hours.

(*b*) The brain cells show changes in their cytologic structure which are progressive from the moment the liver is excised.

(*c*) After excision of the liver, the temperature of the brain falls progressively until death.

(*d*) In every type of exhaustion from whatever cause, the cells of the liver invariably show cytologic changes, such as diminished power of differential staining, edema, and eccentric position of the nucleus.

(*e*) *Granting adequate circulation and respiration in a decapitated animal,* the excision of the liver causes death earlier than decapitation or suprarenalectomy.

Some of the most important functions of the liver remain to be discovered, but there is one possible relation to which I may refer: The brain cells contain almost no stored carbohydrates or neutral fats; they contain almost no factors of safety against acidosis [25] They have almost no stored oxygen. The brain cells are almost wholly dependent on the blood for oxygen and for carbohydrate fuel to maintain their active and continuous metabolism; the blood is dependent on the liver for sugar for the brain. *Apparently,* for its protection against want of sugar, against intracellular acidosis, the brain is in part dependent on a long distance connection with other tissues, especially the liver. The liver cells are endowed with a great facility for autolysis; the brain cells are but slightly subject to autolysis. We may suppose that the keen, stable brain cells have a special chemical dependence on the remarkably unstable liver cells. For opposite reasons, then,

19. Elliott, T. R.: J. Physiol. **32**: 401-467, 1905, **44**: 374-409, 1912.
20. Cannon, W. B.; de la Paz, D., and Hoskins, R. G.: Bodily Changes in Pain, Hunger, Fear and Rage, 1915, Am. J. Physiol. **27**: 64-70, 1911; **29**: 274-279, 1911-1912.
21. Short, A. R.: Lancet **1**: 731-737, 1914.
22. Bedford, E. A.: Am. J. Physiol. **63**: 235-257 (May) 1917.
23. Mann, F. C.: Shock During General Anesthesia, J. A. M. A. **69**: 371-374 (Aug. 4) 1917.
24. Menten, M. L.: Am. J. Physiol. **44**: 176-195 (Sept.) 1917.
25. Mathews, A. P.: Physiological Chemistry, 1916, pp. 586-589-592, 784-785.

the two organs that are most susceptible to acidosis are the brain and the liver—the brain because of its extreme activity in acid production and because of *its lack of intracellular defense against acidosis,* the liver because of its avidity for acids, possibly an adaptation for the protection of other vital organs, especially the brain. If the brain cells contained space for the storage of reserve supplies of energy-producing material and protection against acidosis, in proportion to the space provided for this purpose in the cells of other organs, not only would the size of the brain be greatly and awkwardly increased, but its power to do work would be correspondingly diminished.

The integrity of the liver is essential to the work of the brain; and the integrity of the liver is also essential to the elimination of the acid by-products of metabolism by the kidneys and the lungs. When the liver is excised, the blood tends to become acid as the animal approaches exhaustion. The transfusion of blood and the administration of epinephrin or of morphin exert not the least check on the exhaustion and death which follow excision of the liver. On the other hand, decapitation apparently does not interfere with the function of the liver. For its oxidizing and reducing power, the liver apparently depends, in part at least, on the suprarenals; for, as stated above, the excessive intravenous injection of epinephrin on the one hand, and suprarenalectomy on the other, cause marked cytologic changes in the liver cells—chromatolysis, edema, eccentric position of the nucleus.

In our electric conductivity studies, we found that in exhaustion from any cause the liver and the brain were affected in opposite directions, that is, in extreme exhaustion the conductivity of the brain was decreased, and the conductivity of the liver was increased. In the earliest stages of stimulation, these changes were reversed, the period of increased conductivity of the brain apparently corresponding to the period of hyperchromatism established by our histologic studies.

From these premises, we conclude that the liver is inseparably associated with the brain and the suprarenals in the production of shock and exhaustion; but as the liver has no means of immediate contact with the external excitants of shock and exhaustion, it apparently in some way is influenced indirectly through the mediation of the brain.

We have now seen that exhaustion may be produced both primarily and secondarily by anatomic and functional defects and disabilities of the respiratory system, of the circulatory system, of the blood, of the liver, of the suprarenals. We have seen that in exhaustion these organs and systems share in the general debility, but we have not been able to show that functional impairment of any one or of any combination of these is the sole cause of the exhaustion of the organism in exertion, in emotion, in injury, in infection, in enforced loss of sleep, etc. If, then, the primary cause of exhaustion is not disclosed in the study of these important organs and tissues, which are either directly or indirectly driven by the master tissue, the brain and the nervous tissue, we may then ask: Is the primary cause of exhaustion to be found in the brain? Has the brain inherent elements of weakness greater than those of any other organ or tissue of the body?

THE BRAIN AND THE NERVOUS SYSTEM

The Brain as an Energy-Transforming Organ.—Environment, external and internal, drives the brain; and the brain either directly or indirectly drives the entire organism. Is the brain tissue itself a transformer of potential energy into kinetic energy, and does it drive the body by means of some familiar form of energy which it creates, or does the brain drive the body as a mystery organ obeying no physical laws? Is the brain capable of exhausting itself primarily by its own excessive work, or is it only secondarily exhausted?

Do the brain cells transform much or little energy? Are they active or inactive cells? That the brain transforms potential into kinetic energy, and by means of that energy drives the body, is shown by the want of power of action when the head is cut off. That the brain is not only an active, but the most active energy-transforming organ of the body, is held by Mathews.[26]

The work of the brain is greater in proportion to the weight of its tissue than is the work of any other organ of the body. Alexander [27] and Cserna state that the brain shows a consumption of 0.360 c.c. of oxygen per gram minute, while voluntary muscle shows a consumption of only 0.004 c.c. of oxygen per gram minute. According to these observers, a given weight of brain tissue transforms energy about ninety times as rapidly as an equal weight of the voluntary muscles in the quiescent state. The volutnary muscles constitute 42 per cent. of the weight of the body, the brain 2 to 3 per cent. Hence, according to the findings of Alexander and Cserna, excepting when active, the brain has a total metabolism five times greater than the metabolism of all the voluntary muscles together.

From these facts, we conclude that the brain is an organ of intense metabolism. Are the brain cells safeguarded against the factors of exhaustion?

It would appear that the brain cell is evolved stripped to its decks, to fight the battle of life; as if its function as an energy-transformer were so important that certain means of defense are withheld from the brain cell and provided for it by other organs, for example, protection against intracellular acidosis, against want of oxygen, against want of food. It would seem, therefore, that these vital functions are committed to other organs. The vast volume and distribution of blood in the liver, in the lungs and in the kidneys provide for the rapid elimination of waste which is urgently necessary, especially for the safety of the brain. The extreme avidity of the liver cells for acid metabolites, coupled with the immense cellular surface exposed to the blood stream, we conceive to be one of the greatest safeguards to the brain against acidosis. The large storehouse of sugar in the liver serves as the fuel depot for the brain and as a protection against want of anaerobic oxygen. The blood stream carries oxygen and sugar to the brain; the buffer substances of the blood are a continuous protection to the brain against intracellular acidosis. *The brain cells may be conceived as having their protective and nutritive cytoplasm evolved to function at a distance.*

From the elaborate provision for its protection, we may infer that the energy-transforming function of the brain has such high selective value in the biologic sense as to confer a selective value also on the structure and function of the liver and of the blood; for if the brain cells thus stripped cannot transform energy fast enough to drive the muscles speedily enough to escape from the enemy, then the liver and the blood will perish as well as the brain. The more completely the liver and the blood and the lungs and the kidneys keep the brain cells free from the impairing by-products of their active metabolism, the cleaner pair of heels

26. Mathews, A. P.: Physiological Chemistry, 1916, pp. 563-565, 584-595.
27. Alexander, F. G.: Biochem. Ztschr. 64: 127, 1912.

will the pursuing enemy see. It would seem that if the bulk of the brain cells were increased by stores of lifeless food, their power of attack and defense would be diminished.

The brain cannot work continuously, but a reversible process is necessary at regular intervals to restore it. This process in the higher centers is called sleep. The more intense the activation, the more needed is sleep. The brain is the only organ that sleeps conspicuously. Of great significance is the fact that the entire man spends one third of his time waiting for the brain to restore itself—to put itself again in the position of being able adaptively to transform potential into kinetic energy.

The dominating importance of the brain is further shown by the fact, as Mathews [28] has pointed out, that natural selection in the higher animals has centered on the brain and on the brain alone. Higher animals compete through their brains. Hence, in the brain cells we have the highest development of a mechanism for transforming energy, for securing survival through adaptation.

IS EXHAUSTION OF THE BRAIN PRIMARY OR SECONDARY, OR BOTH?

There is evidence that the brain is both primarily and secondarily involved in exhaustion. Experimental evidence of the primary involvement of the brain in the processes leading to shock and exhaustion is found (*a*) in the histologic picture of immediate hyperchromatism followed by progressive chromatolysis; (*b*) in immediate increased electric conductivity, followed by a progressive decrease below the normal, and (*c*) in immediate alteration in the temperature of the brain as evidenced by direct measurements with the thermocouple.[29] Common experience demonstrates that sudden bad news, intense fright, sudden severe pain, or acute overwhelming infection causes an immediate loss of muscular and mental power. Further evidence of the diminished power of the brain to do work in the presence of an adequate blood pressure and respiration is seen during the early stages of physical exertion, of emotion, of fever, of insomnia, etc. Athletes in the early stage of the contest show no diminution of blood pressure. but they do show diminished mental power.

In shock-producing trauma of animals under anesthesia, it was usually half an hour before the blood pressure began to decline. What would be the physical power of an animal thus traumatized and disemboweled were he allowed to recover from anesthesia, even though his blood pressure were normal? Captain Cowell [30] found that the average blood pressure of soldiers on active trench duty was above normal; but despite their high blood pressure these soldiers nevertheless had to be relieved for rest because of their fatigue.

In the course of fevers, the blood pressure is usually higher than normal, but the man is prostrated. In the midst of acute grief or worry, the blood pressure may not be reduced, but the power of the brain is reduced. A rabbit under intense excitation shows a blood pressure higher than normal, but its brain power is diminished. A brilliant student, a great military strategist, a highly trained executive may suffer a breakdown from mental overwork and be in a state of brain exhaustion, yet the blood pressure may be normal. In the experimental laboratory, in the clinic of life, in the stress of war, we have reliable data from which we conclude that the brain may be exhausted primarily while the blood pressure may be normal or even higher than normal. The brain is primarily exhausted in insomnia, in which doubtless acid by-products are not produced faster than the body is able to eliminate them. The brain is primarily exhausted by anesthetics, by cyanids, by acids, by lack of oxygen, by direct or reflex electric stimulation, by the extision of the suprarenals, by the excision of the liver, etc. On the other hand, neither the brain cells nor any other organ, nor the individual as a whole, is immediately exhausted by unlimited trauma inflicted on areas cut off from connection with the brain by blocking the nerve supply.

To a less degree, but markedly, is exhaustion from trauma or emotion controlled by large doses of morphin, or by nitrous oxid. Nitrous oxid diminishes the oxidation of the brain cells, and hence the brain is less driven by trauma. When exhaustion or shock from trauma is prevented by blocking the nerves, or when the nerves are intact, but the brain cells are prevented by nitrous oxid from being excited to action, not only is the brain protected, but the liver, the suprarenals, and other organs are equally protected; the blood pressure does not fall, and the individual as a whole is almost completely protected against exhaustion. But despite the fact that the brain is the primary factor in both work and exhaustion, the brain is affected also by many secondary causes of exhaustion—defective circulation, insufficient lung ventilation, low blood pressure, anemia, blood acidosis, hemorrhage, lack of oxygen, disease of the liver, disease of the suprarenals, etc.

Apparently the more chemically receptive and reactive the tissue, and the more highly it is evolved to transform energy, the more readily is it exhaustible. Only cells have the power of transforming energy. The cell being the unit of work, the cell equally is the unit of exhaustion, and the brain cell is the most readily exhausted.

We may conclude by repeating Sherrington's statement that the brain is the master tissue of the body. We have seen that the brain is the most active energy-transforming tissue of the body. We may conclude that when we speak of exhaustion of a man, we mean exhaustion of his brain. This is the central fact.

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28. Mathews, A. P.: Physiological Chemistry, 1916, pp. 563-564.
29. The protocols of the researches on the findings in which these statements are based will shortly be published.
30. Cowell, E. M.: The Initiation of Wound Shock, J. A. M. A. 70: 607-610 (March 2) 1918.

Influence of Chemistry on Medicine.—Chemistry has influenced medicine from the days of alchemy onward; Paracelsus and Van Helmont stand out as picturesque figures in its history. In England the rise of physics and chemistry began in Harvey's lifetime with those meetings of scientific men which later gave birth to the Royal Society. It must not be forgotten that the work of such men as Boyle, Hooke, Lower, and Mayow practically solved the problem of respiration not long after Harvey's death—a problem second only in importance to that of the circulation—though a century was to elapse for its full meaning to become clear with the discovery of oxygen. Every advance in physics and chemistry has borne fruit for us in its turn; today we can almost affirm that the chief issues in physiology and pathology are to be sought in the chemical activities of the human body. These, again, are bound up with physical conditions, and there is one recent branch of chemistry, the possibilities of which are only beginning to be appreciated in medicine. If we reflect that the body, from a chemical point of view, consists almost entirely of colloids, the behavior of which is still imperfectly understood, it will be realized that advances in colloidal chemistry are destined to throw a flood of light on the processes of vital activity.—F. W. Andrewes, *Lancet*, Oct. 23, 1920.

LEUKANEMIA

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In 1900, Leube,[1] under the designation of leukanemia, described a rapidly progressive disorder characterized by changes that suggested a combination of pernicious anemia and myelogenous leukemia, the alterations in the peripheral blood being marked by severe anemia, high color index, and the presence of excessive numbers of nucleated red cells and of large mononuclear cells, the latter belonging, apparently, to the myelocytic series. Leube believed that leukanemia was an independent disease and that it could not be included properly in the same category with either pernicious anemia or leukemia. Several years later, Drysdale,[2] in England, collected most of the cases then available in the literature, and added one of his own. He came to the conclusion that leukanemia belongs to a group of atypical myelocytic leukemias.

Analysis of those cases of leukanemia in which postmortem investigation was carried out reveals almost identical anatomic changes, namely, a combination of red and white transformation of the bone marrow, myeloid foci in the liver and spleen, and extensive infiltration and replacement of the lymph nodes by the same sort of large mononuclear leukocytes as are found in the blood and marrow. In addition, there are fatty changes in the liver, heart and kidneys, petechial or larger hemorrhages in the skin, mucous and serous membranes, and, in contradistinction to pernicious anemia, absence of siderosis of the liver.

During life, the number of leukocytes in the blood varies within wide limits, from hypoleukocytosis to hyperleukocytosis, and is consequently of negligible importance from the standpoint of diagnosis. In some cases the white cells throughout remain below, at, or slightly above the normal average; in others, the number is high from the beginning of observation, while still other patients display an abrupt increase in the last few hours of life. The stained film, on the contrary, invariably shows striking deviations from the normal differential quota, in the form of a high percentage of large mononuclear nongranular white cells corresponding, morphologically, to myeloblasts, together with nucleated red cells, most of which are megaloblasts. The polymorphonuclear neutrophils are relatively decreased in number, and in many instances are characterized by the absence of granules in the cytoplasm, their morphology in other respects remaining natural. Variable numbers of eosinophilic and neutrophilic myelocytes are sometimes to be found, but rarely do they constitute an important feature in the blood picture.

In the earlier contributions to the subject, discussion as to the nosologic position of leukanemia centered largely around the identity of the large mononuclear nongranular white cells to be found so abundantly in the circulation, bone marrow, spleen, liver and lymph nodes. In 1913, Treadgold,[3] on morphologic grounds alone, suggested that they were myeloblasts. In the following year, Meyer[4] recorded two clinically and otherwise typical cases of leukanemia in which, in the spleen and lymph nodes, he observed vast numbers of large mononuclear nongranular cells which morphologically resembled myeloblasts and which, moreover, gave a positive oxydase reaction. The application of this test was really the first scientific step taken to identify the cell—previously its status was entirely a matter of opinion.

Recently I have had occasion to study a case of leukanemia in which the preponderating white cell yielded a positive oxydase reaction, this fact, together with the morphology of the cell, serving to confirm Meyer's contention that it is a myeloblast.

REPORT OF CASE

History.—A woman, aged 32, was admitted to Bellevue Hospital, Aug. 11, 1920, and died nine days later. She stated that five weeks previous to admission she became suddenly ill with the symptoms of severe occipital headache and vomiting. At about the same time she noticed that she was growing weak and pale. At the moment of admission, the patient was extremely pale. The conjunctivae showed numbers of hemorrhagic petechiae. Ophthalmoscopic examination revealed flamelike hemorrhagic extravasations in both retinas. The edge of the liver was felt about 4 cm. above the level of the umbilicus, and the spleen was palpable slightly below the costal slope. The red cells numbered 630,000; white cells, 36,000; hemoglobin, 20 per cent.; color index, 1.6. The stained film revealed anisocytosis, polychromatophilia and poikylocytosis. The differential count showed megaloblasts, 15 per cent.; normoblasts, 2 per cent.; polymorphonuclear neutrophils, 10 per cent.; lymphocytes, 15 per cent.; eosinophilic myelocytes, 1 per cent.; neutrophilic myelocytes, 1 per cent., and 51 per cent. of large mononuclear cells with a round or indented nucleus staining rather deeply and occupying almost the whole of the cell body, and a slightly basophilic cytoplasm with few or no granules, the great majority of the cells being entirely free from granules. Blood cultures remained sterile. The patient's temperature varied between 101 and 102 F., reaching 103 on one occasion. The systolic blood pressure was 110; diastolic, 50. The urine was negative.

Necropsy.—The body was extremely pale but well nourished. There were a few petechiae in both ocular conjunctivae. The subcutaneous fat was well preserved and light yellow. The skeletal muscles were light reddish.

The heart was liberally sprinkled with light yellow spots lying beneath the endocardium and scattered throughout the muscle substance. These, on microscopic examination, were found to consist of foci of fat droplets in the muscle fibers.

The pleurae were spotted with hemorrhagic petechiae, and there was a large, solitary, hemorrhagic infarction in one of the lungs. Both lungs were edematous.

The liver was large and light yellowish brown; beneath the capsule and throughout the substance were myriads of small, yellowish points lying in the centers of the lobules. These, on microscopic examination, were found to represent fat. Stained by sudan III, it was seen that the cells of the inner half or two thirds of the lobule were completely replaced. In addition, section of the liver revealed a half dozen irregularly scattered foci which were finely mottled in yellow and red, the largest focus measuring about 1 cm. in diameter, all of them lying flush with the cut surface. These, on microscopic examination, were found to consist of myeloid formations, that is to say, of collections of large mononuclear cells with smooth cytoplasm, corresponding to the mononuclear cells found in such abundance in the circulating blood. These cells yielded a positive oxydase reaction. Scattered among them were considerable numbers of nucleated red forms. These foci lay in the periportal connective tissue or between the liver cells, forming collections of various shapes and sizes.

The spleen was distinctly enlarged, steel gray, and of increased consistency. On section, the cut surface was riddled with pinhead-sized, grayish pink foci lying so closely together as almost to obscure the reddish color of the pulp in which they were embedded. Microscopic examination

1. Leube: Sitzungsber. d. phy. med. Ges., Wurzburg, 1900.
2. Drysdale: Quart. J. Med. **1**: 89, 1908.
3. Treadgold, C. H.: Lancet **1**: 94 (Jan. 11) 1913.
4. Meyer: Frankfurt. Ztschr. f. Path. **15**: 40, 1914.

disclosed that the greater part of the lymphoid follicles, together with the pulp, had been infiltrated by hordes of large, mononuclear, nongranular cells such as were encountered in the liver and elsewhere. Among them nucleated red cells were to be distinguished in considerable numbers.

Both the liver and the spleen failed to react for iron.

The kidneys presented no changes to the naked eye other than marked anemia and numerous petechiae in the mucosa of the pelves. On microscopic examination, however, numbers of myeloid foci of the same general description as those encountered in the liver and spleen were found to be present.

The mesenteric and retroperitoneal lymph nodes were more distinct than in ordinary circumstances, discrete, and firm in consistency, the largest approximating 2 cm. in length. Seen through the capsule, they were a dull grayish brown; on section, the cut surface was smooth and light brownish gray, with minute grayish or grayish yellow streaks or points. Microscopic examination revealed practically complete replacement of the lymphoid tissues by infiltrating large mononuclear cells that responded to the oxydase test.

The bone marrow of the lower end of the femur was of soft consistency, abundant in quantity, and composed of distinct reddish islands or streaks intermingling with and gradually fading into grayish or cream-colored foci, the whole combining to give the surface a velvety, mottled appearance. Smears of the bone marrow revealed markedly increased numbers of large mononuclear cells of the type already described in the circulating blood. The majority of these cells were nongranular. In addition, nucleated red cells, most of them megaloblasts, were visible in profusion. The polymorphonuclear neutrophils were relatively few; but, when seen, the cytoplasm in the majority of cases was entirely bereft of neutrophilic granules. An occasional eosinophilic or neutrophilic myelocyte was to be observed.

The remaining organs showed nothing worthy of record in the present connection, except for the presence of petechial hemorrhages in the mucosa of the larynx, hyperplasia of the lymphoid follicles at the base of the tongue and in the stomach, and petechial or patch-like hemorrhages into the pia mater.

COMMENT

From these observations and from those of Meyer, previously mentioned, it appears that the identity of the preponderating large mononuclear leukocyte in leukanemia has been established—that it is the myeloblast. Among hematologists, the consensus favors the view that the myeloblast is capable of differentiation into nucleated red cells, on the one hand, and into granular leukocytes, on the other—eosinophilic and neutrophilic myelocytes, polymorphonuclear neutrophils, and eosinophils. From the histogenetic standpoint, it appears that the provocative agent in leukanemia—whatever it may be—strikes the bone marrow with such force as to bring about almost instantaneous demoralization of its hematogenic centers, thus causing to be thrown into the circulation vast numbers of embryonal cells of both the erythroblastic and leukocytic series, leukanemia representing, therefore, a combination of changes of the same type as those encountered in pernicious anemia and myelogenous leukemia—diseases which ordinarily are regarded as antipodal, but which really represent, most likely, different responses to the same sort of stimulus acting on the same mother cell in the bone marrow with different degrees of intensity. For example, in pernicious anemia and in chronic myelogenous leukemia, the provocative agent acts with a measure of deliberation which permits differentiation of the metrocyte into erythroblast and myeloblast, respectively, while in leukanemia the hematogenic marrow is so completely and so suddenly thrown into confusion that regeneration proceeds without any attempt at orderly discrimination in favor of any particular variety of cell. In pernicious anemia, also, myelocytes are occasionally to be detected in the peripheral blood, but are completely overshadowed in numbers by the nucleated red cells, although in the bone marrow the presence of increased proportions of myeloblasts and myelocytes is common. Conversely, in chronic myelogenous leukemia the occurrence of nucleated red cells in the peripheral blood may constitute a striking feature, Gulland and Goodall[5] having recorded 52,000 per cubic millimeter in one of their cases. In other words, the same hematologic composites are sometimes to be found in the blood and bone marrow in pernicious anemia and chronic myelogenous leukemia as are constantly present in the same localities in leukanemia, but with the important difference that, in the latter condition, numerical distinctions are less sharply pronounced, although the primary reaction of the bone marrow is qualitatively the same.

Leukanemia, in some respects at least, is not inaptly comparable to certain rapidly progressive disorders of the blood in which the lymphocytes play the major rôle, notably the so-called acute lymphatic leukemia, Sternberg's leukosarcomatosis, and the leukemic transformation of mycosis fungoides. In acute lymphatic leukemia, the disease pursues an extremely rapid course, attended in some instances by pronounced increase in the total number of leukocytes in the blood, the majority consisting of small lymphocytes, while in other cases there is no leukocytosis or even leukopenia, although the differential count shows the same overwhelming preponderance of small lymphocytes. In Sternberg's leukosarcomatosis,[6] there is present in some part of the body—within the thorax or in the skin, breast, uterus, stomach or elsewhere—a lymphocytic or myelocytic tumor that persists for months or years, and suddenly commences to pour lymphocytes or myelocytes into the blood in such numbers as to constitute a form of acute leukemia, death occurring in a few weeks. The chloromas, apparently, belong in the same general category—that is to say, tumor-like growths in various parts of the bone marrow that are apt abruptly to throw enormous numbers of myelocytes into the blood and thus to terminate life in a few weeks. In the same way, mycosis fungoides[7] not infrequently ends with the blood picture of acute lymphatic leukemia. In fact, mycosis fungoides is no longer to be regarded as a primary affection of the skin, but as the cutaneous expression of changes in the lymph nodes, bone marrow and elsewhere that are closely comparable to those of Hodgkin's disease.[8] Clinically, however, Hodgkin's disease and mycosis fungoides are divergent in that, among other things, leukemic transformation of Hodgkin's disease has never been observed. The so-called lymphodermia perniciosa of Kaposi[9] is accompanied by changes in the skin so noticeably like those of mycosis fungoides that the French dermatologists are inclined to classify the condition as such—a view which is supported by the fact that, in both, terminal leukemic transformation is common.

As far as leukanemia is concerned, it is difficult, if not impossible, at this time to classify it or to state

5. Gulland and Goodall: The Blood, 1912.
6. Sternberg: Wien klin. Wchnschr. **21**: 475, 1908; Beitr. z. path. Anat. u. z. allg. Path. **61**: 75, 1916.
7. Fraser, J. F.: J. Cutan. Dis. **35**: 793 (Dec.) 1917. Symmers, Douglas: Ibid. **37**: 1 (Jan.) 1919.
8. Symmers, Douglas: A New Interpretation of the Pathologic Histology of Hodgkin's Disease, Arch. Int. Med. **19**: 990 (June) 1917.
9. Kaposi: Med. Jahrb. **15**: 129, 1885.

definitely whether it is or is not an independent disease. It seems to me that the most acceptable interpretation is that leukanemia and the acute leukemias occurring either spontaneously or as a terminal event in association with previously existing lesions of the hemopoietic apparatus, are manifestations of sepsis.

SUMMARY

1. Leukanemia is characterized clinically by an extremely rapid course and by changes in the blood, bone marrow, spleen, liver and lymph nodes that partake both of the nature of pernicious anemia and myelogenous leukemia, the causative agent acting on the hematogenic centers of the bone marrow in such fashion as to produce marked numerical increase in those primitive cells which represent the precursors of both the erythroblasts and the granular leukocytes. The primitive cells in question are myeloblasts, as shown by their morphology and by the fact that they respond to the oxydase test.

2. Histogenetically, pernicious anemia, myelogenous leukemia and leukanemia are closely related conditions, and represent different quantitative responses on the part of the bone marrow to regenerative stimuli acting on the same metrocyte, namely, the myeloblast.

3. Leukanemia is probably not an independent disease but one of a group of rapidly progressive derangements of the blood-forming tissues due to infection.

CARCINOMA OF THE PANCREAS WITH ULCERATION INTO THE GASTRO-INTESTINAL TRACT *

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Carcinoma of the pancreas is usually recognized by its effects on adjoining structures, either by mere pressure, as in the case of common bile duct obstruction, or by direct extension of the malignant process. As a result of involvement of the gastro-intestinal tract in the latter process ulceration sometimes occurs, although Friedreich is quoted by Opie [1] as including this occurrence among the rare pathologic findings.

If one consider the anatomic relations of the pancreas to surrounding structures, one is at once impressed that such ulceration might be expected to be a common finding. The only structure that intervenes between pancreatic tissue and the surrounding viscera is peritoneum, since the pancreas has no true capsule. The head of the gland is molded on the side of the duodenum; the anterior surface is in contact above and on the right with the beginning of the transverse colon, without even the interposition of peritoneum, as a rule. The anterior surface of the body forms a considerable portion of the stomach bed, and is in relation with the pylorus. The left end of the body is in relation with the splenic flexure of the colon. The tail is in contact with the spleen, and is in close relation with the left suprarenal gland and the left kidney.

Furthermore, the symptoms of carcinoma of the pancreas are mainly symptoms arising from the surrounding structures, which speaks strongly for their early physiologic if not anatomic involvement in the growth. Thus, pain, jaundice and the various gastro-intestinal symptoms that occur do not arise from the pancreas itself, but from those structures which surround it. The pathognomonic signs and symptoms arising from the pancreas itself are generally acknowledged to be far less frequent than most of the handbooks and manuals of medicine would have us believe.

Through the kindness of Dr. Allen J. Smith, I have been able to review records of the cases of primary carcinoma of the pancreas which came to necropsy from the wards of the University and the Philadelphia General Hospitals, from 1874 to 1916. There were eleven cases in which the diagnosis was confirmed histologically. Of these there were six in which was found an ulcerating cavity leading from the tumor mass into one or more of the hollow viscera.

RELATIVE FREQUENCY WITH WHICH PARTS OF GASTRO-INTESTINAL TRACT WERE INVOLVED IN ELEVEN CASES OF CARCINOMA OF PANCREAS

Organ into Which Ulceration Took Place	Case Number 1	2	3	4	5	6	7	8	9	10	11	Total No.
Stomach	0	0	0	+	0	0	0	0	0	+	0	2
Duodenum	+	+	+	0	0	+	0	0	0	0	0	4
Jejunum	0	0	0	0	0	0	0	0	0	0	0	0
Ileum	0	0	0	0	0	0	0	0	0	0	0	0
Gallbladder	0	+	0	0	0	0	0	0	0	0	0	1
Colon	+	+	0	+	+	0	0	0	0	0	0	4
Total number in each case	2	3	1	2	1	1	0	0	0	1	0	11

The accompanying table shows the relative frequency with which the various parts of the gastro-intestinal tract were involved. It will be noted that the greatest number of ulcerations occurred into the duodenum and transverse colon, which might be surmised from the close proximity of these organs to the pancreas. This study suggests, furthermore, that ulceration of the abdominal viscera by pancreatic carcinoma is of frequent occurrence, and that it deserves consideration in order to arrive at a true understanding of the clinical picture and course of this disease.

REPORT OF CASE

As an illustration of this complication of pancreatic carcinoma, a case record is presented:

History.—Robert K., aged 63, white, entered the men's medical ward of the University Hospital, Dec. 22, 1919, with the chief complaint of pain in the stomach. Five weeks before he was suddenly seized with severe abdominal pain of a colicky nature, located in the hypogastrium. This pain lasted about two hours, and required morphin for its relief. Following this a burning pain developed in the epigastrium, and persisted constantly until his entrance to the hospital. During this time he was constantly nauseated, but he never vomited. He had no other symptoms.

He had had similar attacks, though not so severe, coming about once every year for the last six years. Seven years before he had an attack of acute inflammatory rheumatism, which kept him in bed five weeks. Other than this the past medical history was negative. The family and social history were insignificant.

Physical Examination.—The patient was well developed, with an excess of adipose tissue. The mucous membranes and conjunctivae were pallid. There was a generalized vascular sclerosis. His mental state was the most striking feature about him; he was very apathetic, answered questions incoherently, and talked in a wandering fashion. He was apparently suffering pain. The face was sallow, with a slight subicteroid tint. There was a marked arcus senilis, and the eyegrounds showed sclerotic tortuous vessels. The gums

* Read before the Pathological Society of Philadelphia, March 10, 1920.

* From the Service of Dr. Alfred Stengel, Hospital of the University of Pennsylvania.

1 Opie, in Osler and McCrae: Modern Medicine 3: 650, 1914.

showed a great deal of pyorrhea, the tongue was coated, and the breath foul. The posterior cervical and epitrochlear glands were palpable. The fingers were cyanosed. The chest was emphysematous in shape. Physical findings in the lungs were entirely negative. The area of cardiac dulness was somewhat widened: right base, 4 cm.; left base, 13 cm. The heart sounds were weak. No murmurs were present. The second aortic sound was accentuated. The abdomen was covered with a thick panniculus adiposus, interfering with examination. The right rectus was slightly more resistant than the left. There was tenderness over the gallbladder region. No masses could be felt. The legs and feet were normal. The superficial and deep reflexes were normal. The blood pressure was 132, systolic, 70 diastolic. The blood showed a slight anemia and 12,400 leukocytes, with a polymorphonuclear increase. The urine showed a specific gravity of 1.015, a trace of albumin, and a few light and dark granular casts. The temperature on admission was 101.6 F.; pulse, 108; respiratory rate, 24.

Based on the history, and the tenderness over the gallbladder region, a tentative diagnosis of empyema of the gallbladder, with gallstones, was made.

Clinical Course.—The urine continued to show albumin and light and dark granular casts in varying amount. The specific gravity ranged from 1.008 to 1.023. One specimen showed a trace of sugar, but this was never repeated, even with twenty-four hour samples. The blood continued to show a slight anemia, increasing as time went on. The leukocyte count ranged from 6,000 to 23,000. Blood urea nitrogen, plasma carbon dioxid and plasma chlorids were normal. A rectal examination was negative. A gastric analysis revealed: 320 c.c. of contents forty-five minutes after an Ewald meal with a total acidity of 10, and no free hydrochloric acid; no lactic acid; occult blood, positive. Examination of the stools was negative until Jan. 5, 1920, when occult blood was reported strongly positive for the first time. The Widal reaction on two occasions was negative for typhoid, paratyphoid A, and paratyphoid B.

In spite of the diagnosis of empyema of the gallbladder, it was decided that the patient's condition precluded operation. He remained much the same as on admission, save for the increasing loss of flesh and strength. At times he would be clearer mentally, but would soon relapse into his lethargic state. January 19, he vomited a large quantity of blood early in the morning. Three or four times following this he vomited large quantities of fresh, bright red blood. By the afternoon he had ceased vomiting, but he continued to grow progressively weaker, and he died that evening.

Necropsy.—The peritoneal cavity contained no free fluid, and the peritoneum was smooth and glistening. The thorax was negative. The aorta showed atheromatous plaques, and sclerosis. The heart showed marked cloudy swelling and interstitial fibrosis. The lungs were normal. There was a chronic perisplenitis, with fibrosis and passive congestion. The kidneys showed a chronic parenchymatous nephritis. The liver showed cloudy swelling, with slight fatty infiltration. The posterior wall of the stomach was adherent to a large ulcerating mass, but not infiltrated by it. The duodenum contained large quantities of brownish, bloody fluid. The lower duodenum was firmly adherent to a large mass, apparently arising from the head of the pancreas, which appeared to have eroded into the duodenum just below its curvature at the head of the pancreas. The head and anterior half of the body of the pancreas was transformed into a huge, necrotic, foul smelling mass, 15 cm. in its greatest diameter. This mass was firmly attached to the posterior wall of the stomach, and the lower part of the duodenum and transverse colon. The lower pole of the spleen and the under surface of the diaphragm were likewise adherent. In the middle portion of the transverse colon two large openings were present, the larger one about 3 cm., the smaller 1.5 cm. in diameter. The openings of the intestine connected with the ragged ulcerating mass, the boundaries of which were stated above. The center of this mass formed a cavity in which blood clots and necrotic material lay free.

A gross diagnosis was made of "ulcerating cancer of the head of the pancreas, with erosion into the transverse colon, and probably erosion into the lower portion of the duodenum. Adhesions of the cancer to the posterior wall of the stomach, the transverse colon, lower part of the duodenum, the pole of the spleen, and the peritoneal surface of the right diaphragm."

The histologic examination disclosed a primary carcinoma of the pancreas, medullary in type.

FAMILY OUTBREAKS OF EPIDEMIC POLIOMYELITIS *

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The occurrence of many cases of an infectious disease in the same household is generally considered as indicating the degree of contagiousness of the disease. In epidemic poliomyelitis, the occurrence of multiple cases is the exception rather than the rule. Instances of multiple cases have been reported in some of the larger epidemics, and no doubt more such cases would have been observed had the present diagnostic methods been used and abortive cases recognized.

One of the earliest instances, in which four or more cases of poliomyelitis were observed in a single household, was reported by Wickman [1] in his study of the epidemic in Sweden in 1905. In this epidemic of 1,031 cases, there were fourteen households in each of which four cases of poliomyelitis occurred; seven households in each of which five cases occurred, and one household in which eight cases occurred. No record, however, is given of the number of families or children in any of these households, but he states that the onset is often simultaneous. When infection is not simultaneous, the symptoms of the secondary cases appear in from six to twelve days. Shidler,[2] in a report on the epidemic in Nebraska consisting of 144 cases, observed four cases in each of three families, and six cases in another family. In the epidemics in Austria between 1909 and 1913, three instances of four in a single family, and one instance of five in a family are recorded by Stiefler.[3] Six instances in which four members of the same family developed poliomyelitis are recorded in the New York epidemic [4] of 1916, in which there were more than 8,000 cases. Few other accounts of four or more cases in a single family in smaller epidemics are on record, but the clinical records in all multiple cases are so meager that in some, at least, doubt might be raised as to the diagnosis.

Last summer we observed an instance in which four cases of poliomyelitis developed in one family. This family consists of the father, mother and eleven children, whose ages range from 5 to 23 years. The family lives in a two story frame cottage of eight rooms, the three adjacent lots being used for garden and chicken yard. It is not a congested part of the city, and the sanitary conditions of the house and surroundings are good. No definite source of infection could be determined, since there were no cases of poliomyelitis in the vicinity or in the places the children visited during the summer. The children played frequently with a pet dog and in the yard where the chickens and ducks

* From the John McCormick Institute for Infectious Diseases.

1. Wichman: Acute Poliomyelitis, Nervous and Mental Disease Monograph, Series No. 16, New York, 1913.
2. Shidler, G. P.: The Epidemic of Spinal Disease in Nebraska, J. A. M. A. **54**: 277 (Jan. 22) 1910.
3. Stiefler: Wien klin. Wchnschr. **28**: 1079, 1915.
4. The Epidemic of Poliomyelitis, New York City, 1916.

were kept, stable manure being brought in each week for the chickens to scratch in. An older brother returned from the navy two weeks prior to the onset of the first case, and Mary, the first one to become ill, had been swimming once during the summer (a month prior to the onset) and, together with her sister Irma, the second to become ill, had visited Lincoln Park a week prior to the onset of her illness, and no doubt in going to and from the park on the street car came in contact with a large number of people.

REPORT OF CASES

Mary, aged 13, become ill with a headache on the morning of August 15, and morning headaches continued for the next three days. On the evening of the third day, after coming home from an amusement park, she had a chill, and on the following day she had chills, fever, nausea and vomiting. She felt quite well for the next few days except for coryza, but on the 22d she vomited again and felt worse. She felt better after this for four days, but on the morning of the 26th she felt a heaviness of the right arm, and paralysis developed during the day. She entered the Durand Hospital on the 29th, not appearing acutely ill and with a normal temperature. There was a complete paralysis of the deltoid, partial paralysis of the biceps, weakness of the pronators and supinators of the forearm, and of the flexors and extensors of the wrist and fingers of the right arm. The neck was slightly rigid, and forced flexion of the head caused pain. The right patellar reflex was absent, but all other reflexes and movements were normal. A few days later a slight paralysis of the right side of the face developed. When the patient left the hospital, October 28, there was a slight return of power in the deltoid, more return of power in the biceps, and the muscles of the forearm were still weak. The facial paralysis showed no change.

Irma, aged 9, the second to become ill, was taken sick, August 19, with fever and headache, but felt better the next day and was up and around until the 22d, when severe headache, fever, and pain in the upper portion of the spine developed. The following day the fever subsided, but the headache was more severe and there was a nasal discharge. This condition continued until the 26th, when she noticed pain and weakness of the right leg. The next day the left leg became painful, and two days later the arms also became painful. The patient entered the hospital, August 29, with a temperature of 99.4, and did not appear acutely ill. The neck was rigid, and forced flexion was painful; the shoulders could be moved, but movement caused pain; the legs were partialy flexed, and forced extension caused so much pain that the extent of the paralysis could not be determined. The abdominal and patellar reflexes could not be elicited. Spinal fluid, August 30, was clear, under slight pressure, with cell count of 40, mostly mononuclear leukocytes, the Ross-Jones and the Heller tests were positive, and Haines' solution was reduced. Cultures were negative. The pain in the legs subsided, and paralysis of the recti femoris, iliacus, and the aductors of the right leg were definitely determined; no paralysis of the left leg was evident. The abdominal muscles were paralyzed. The patient was discharged, October 6, with apparent improvement of the paralyzed muscles.

Harry, aged 12, the next to become ill, was taken sick, August 31. He complained of slight pain in the fingers of the right hand, and later this subsided and pain developed in the back of the neck. He entered the hospital the same day with a temperature of 101.8, appearing quite ill. There was some injection of the eyes, a flushing of the face, and considerable rigidity of the neck, forced flexion causing pain. All the reflexes were present, and all movements were apparently normal. A spinal puncture was made, September 1, and the fluid was opalescent, under moderate pressure, had a cell count of 460 (53 per cent. polymorphonuclears, 43 per cent. lymphocytes), the Ross-Jones and Heller tests were positive, and Haines' solution was reduced. Cultures were negative. No paralysis ever developed, but the patient cried with severe pain in the legs which lasted until September 5. The patient was discharged in good condition, September 28.

John, aged 15, the last to become ill, was taken sick, September 1, with pain in the back of the neck. This disappeared within twenty-four hours, but four days later the patient complained of severe pain in the left iliac region, and the following day shooting pains were felt in the left leg. This pain continued and was present when the patient entered the hospital, September 8, with a temperature of 100.8, and slight rigidity of the neck, forced flexion being painful. Flexion of the legs on the abdomen caused pain. The patellar reflexes were absent, but all other reflexes were present. There was no definite paralysis. The spinal fluid was clear, the cell count 108, mostly mononuclear lymphocytes, the Ross-Jones test negative, Heller test positive, and Haines' solution was reduced. Cultures were negative. September 12, the patient complained of heaviness in the right leg, and two days later both legs were affected and the patient could not hold the legs more than a few seconds when raised from the bed. The condition of the right leg improved, but the left leg became worse and, September 26, the patient could not raise the left heel more than 2 feet from the bed when the leg was extended. There was some impairment of flexion at the knee and hip. When the patient was discharged, October 6, there was no improvement of the left leg.

COMMENT

It would appear that Mary and Irma were simultaneously infected, and that Harry and John were also simultaneously infected about two weeks later. This apparent simultaneous infection of the girls and also of the boys is in accordance with observations in other family outbreaks; but whether the source of infection for all four cases was a common source, or whether the boys became infected from the girls, cannot be determined definitely.

AN EXPERIMENTAL STUDY OF THE LATENT SYPHILITIC AS A CARRIER

PRELIMINARY COMMUNICATION *

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Need has been felt for more extensive study of the latent syphilitic as a possible source of infection in relation to hereditary and congenital syphilis. A large experience with this disease suggests the importance of the so-called latent stage. A careful survey of the literature dealing with the infectivity of the blood and other material taken from syphilitics in all stages of infection has shown a surprisingly small amount of experimental investigation. With regard to the problem of latency and its bearing on the transmissibility of syphilis, the work reported is meager, and questionable as to the accuracy of the term "latent."

PREVIOUS INVESTIGATIONS

The blood from latent cases has been injected into rabbits in thirty-eight instances with four positive results (Uhlenhuth and Mulzer,[1] Frühwald[2] and others). Of these, three cases described by Frühwald cannot be regarded as latent syphilis, since active lesions were present in all of them. The other instance

* Work done under a grant from the U. S. Interdepartmental Social Hygiene Board, Washington, D. C.
From the Department of Dermatology, Washington University School of Medicine, and the Barnard Skin and Cancer Hospital.

1. Uhlenhuth and Mulzer: Berl. klin. Wchnschr. **49**: 153, 1912; ibid. **50**: 2031, 1913; Zentralbl. f. Bakteriol., Orig. **64**: 165, 1912.
2. Frühwald: Wien. klin. Wchnschr. **25**: 584, 1912; Dermat. Wchnschr. **59**: 1319, 1914; ibid. **60**: 513, 1915.

mentioned by Uhlenhuth and Mulzer is subject to the same criticism. The patient, although asymptomatic, had been delivered of a frankly syphilitic child, eighteen days before the specimen of blood was obtained, and her husband was actively syphilitic. The inguinal glands in the early stages of syphilis have been found to contain *Spirochaeta pallida* (Schaudinn and Hoffmann,[3] Metchnikoff and Roux,[4] and Finger and Landsteiner[5]). Buschke and Fischer[6] have demonstrated the organisms by direct puncture of the inguinal gland of a woman who showed no signs of syphilis and gave birth to a syphilitic child. This is, so far as is known, the only instance on record in which a latent syphilitic has been found to harbor *Spirochaeta pallida*. The value of this finding, however, cannot be interpreted with accuracy owing to the fact that no actual inoculation experiments were performed, and furthermore, owing to the recent delivery of an infected child. The semen from *latent* syphilitics has never been found to contain *Spirochaeta pallida*. One experiment has been recorded (Uhlenhuth and Mulzer).

THE PRESENT INVESTIGATION

The object of this investigation was to determine the infectivity of (1) lymphatic glands, (2) semen, (3) blood, (4) spinal fluid, and (5) nasal washings obtained from persons known to have syphilis in a latent form. The tonsils and postmortem testes were studied in too few instances to merit a detailed report of the results at this time.

The cases studied were grouped in accordance with the following classification of latency, which was devised with a view to include all possible sources of suspicious material:

Group 1. Syphilitics who have had no treatment in the last two years, with no symptoms, but with a positive blood Wassermann reaction.

A. Same as Group 1, with a negative Wassermann reaction.

B. Syphilitics who had become serologically "well" according to the following definition:

(*a*) Two successive well-spaced negative blood Wassermann reactions.

(*b*) A negative spinal fluid Wassermann reaction, three months after a rest period.

(*c*) Normal cell count in spinal fluid.

Group 2. Those who have a distinct clinical history of syphilis, who have never had any treatment and who have no symptoms, but who have a positive blood Wassermann reaction.

A. Same as Group 2, with a negative blood Wassermann reaction. All cases in this group must have given a history under any or all of these heads:

(*a*) Primary sore at some time in the past.

(*b*) Marriage to a syphilitic.

(*c*) Miscarriages.

Group 3. Those with visceral syphilis, such as aortic aneurysm or cerebrospinal syphilis, and the like, any form other than skin and mucous membrane involvement, with a positive blood Wassermann reaction.

A. Same as Group 3, with a negative blood Wassermann reaction. This classification was supplemented further with those women who would be classed according to Colles' law and children according to the law of Profeta, that is, mothers who were themselves clinically asymptomatic but whose children were syphilitic, and children who were clinically asymptomatic but whose mothers were syphilitic, respectively.

3. Schaudinn and Hoffmann: Arb. a. d. k. Gsndhtsamte **22**: 527, 1905.
4. Metchnikoff and Roux: System of Syphilis **1**, 1914.
5. Finger and Landsteiner: Arch. f. Dermat. u. Syph. **81-82**: 147, 152, 1906.
6. Buschke and Fischer: Compt. rend. Soc. de biol. **58**: 845, 1905; Berl. klin. Wchnschr., 1906, No. 13, p. 383.

Out of a total number of 500 syphilitics seen at the Washington University Clinic during the year, seventy-five definite latent cases could be selected (15 per cent.). Whenever possible, several different materials were taken from each patient. From the time when first symptoms were noticed according to the patient's history, and the date of obtaining specimens, from one to forty years had elapsed, so that the groups we examined represented all stages of latency.

TECHNIC

Healthy, full-grown male rabbits, with well-developed testes, were used in the inoculation experiments. The species were chiefly white and gray, although Rufus Reds and a few Flemish Giants were included in the series. No difference in susceptibility could be found by control inoculations. Fluid materials, such as the blood, semen, spinal fluid and nasal washings, were injected in amounts of from 1.2 to 2 c.c. Glands and testes were first macerated with sterile quartz sand, suspended in 5 c.c. of salt solution, filtered through gauze and injected similarly into the rabbits' testes by inoculating along the long axis and expelling the material as the needle was being withdrawn slowly from the body of the testis. All materials, with the exception of a series of bloods which were incubated for periods varying from three days to four months, were injected in from about fifteen minutes to one-half hour from the time they were obtained.

Blood was obtained with scrupulous care from the median vein of the arm after cleansing the area with iodin and alcohol. From 10 to 15 c.c. were drawn with a Luer syringe, part of the blood was then defibrinated with glass beads in a test tube, and a portion was set aside for incubation in sealed tubes to be employed in a separate series which included specimens kept at 37 C. for periods of time ranging from three days to four months. Spinal fluid, free from blood, was obtained in the usual manner by lumbar puncture. Semen was collected in sterilized condoms by manual friction after the penis and meatus had been thoroughly cleansed. Inguinal glands were excised under local anesthesia from patients in whom the glands were not too deeply situated. Nasal washings were obtained by spraying 4 or 5 c.c. of sterile salt solution into the nose of the patient so that the fluid passed out through the opposite nostril into a Petri dish. Rinsings from both nostrils were made available for injection in this manner.

Inoculated rabbits were examined carefully at frequent intervals within three weeks after injection. Dark field examinations of the testicular fluid material were made at least every two weeks, even when no visible changes occurred, in order to safeguard against missing minute lesions within the body of the testes. Punctures were made with sterile glass pipets drawn out and broken off at the end so as to leave a sharp cutting edge. By means of gentle pressure and a slight boring motion, laceration was avoided. Observations were continued over a period of eight months, and in many instances for a year. Animals that have remained negative to date are still under observation.

I. INFECTIVITY OF LYMPHATIC GLANDS FROM LATENT SYPHILITICS

Fourteen inguinal glands from as many patients were inoculated into rabbits' testes. Of this entire series of rabbits, three died within three months after inoculation, showing no signs of infection.

Positive results were obtained with glands from three patients, two female and one male.

EXPERIMENT 1.—F. D., a woman, aged 33, had had one miscarriage eleven years before. The blood Wassermann reaction was ++. There had been no pregnancies since the last miscarriage. She had taken no treatment at any time, and her husband was well.

Oct. 13, 1919, the right testis of Rabbit 116 was injected with 5 c.c. of salt solution suspension of inguinal gland from the patient. Dark field examination of the original suspension was negative for *Spirochaeta pallida*. The animal remained negative until December 6, when the testicle appeared slightly swollen and indurated. No definite nodules could be detected on palpation. Diffuse orchitis was present. Dark-field examination of a small amount of material obtained by capillary puncture demonstrated enormous numbers of *Spirochaeta pallida*. The incubation period was fifty-four days. The strain was lost in the second generation.

EXPERIMENT 2.—M. G., a woman, aged 19, with no history of syphilis, and a negative family history, gave a ++ blood Wassermann reaction. She had never had any treatment.

Oct. 27, 1919, the left testis of Rabbit 137 was injected with 3 c.c. of salt solution suspension of inguinal gland.

December 15, the left testis was markedly indurated and somewhat enlarged. Dark-field examination of testicular fluid revealed numerous spirochetes The incubation period was fifty days. Subsequent generations of this strain developed after an incubation period of four or five weeks.

EXPERIMENT 3.—D. C., a man, aged 21, had had a chancre on the penis one year before, of two weeks' duration. He took two treatments of arsphenamin at that time. The inguinal glands were enlarged during the course of treatment. There was no history of skin eruption. Following treatment, the Wassermann reaction was negative after two months. Intensive treatment was again begun with mercury and arsphenamin. The Wassermann reaction was + in the cholesterin antigen only at the time the gland was excised for this experiment.

April 12, 1920, the right testicle of Rabbit 226 was injected, with 1.5 c.c. of salt solution suspension of the inguinal gland.

April 26, the testis was enlarged and firm in the upper pole; puncture disclosed slight secondary infection.

July 6, secondary infection had almost entirely receded.

August 23, a small, fluctuating mass was palpable at the upper pole of the right testis. Puncture proved positive for *Spirochaeta pallida* in the dark field. The incubation period was 133 days. Owing to early secondary infection during which *Spirochaeta pallida* may have been missed, this incubation period is doubtful. In the second generation the period of incubation was reduced to about five weeks.

It is important to note that in one of these cases, the Wassermann reaction had remained negative after antisyphilitic treatment, and was found to be + in cholesterin antigen only at the time the gland was shown to contain active, virulent spirochetes.

It is of interest in this connnection to observe that animal inoculations with the blood specimens from these three patients resulted negatively.

II. INFECTIVITY OF SEMEN FROM LATENT SYPHILITICS

Seventeen specimens of semen from different patients were inoculated. In this series, four rabbits died within one month and two within three months after injection, showing no signs of syphilis.

Semen was found to contain active, virulent spirochetes in two instances. The blood from these patients was injected into rabbits with negative findings.

EXPERIMENT 4.—J. D., a man, aged 39, with a history of chancre on the penis thirteen years before, at which time he took pills for a period of three years, together with two doses of arsphenamin, had had no treatment since then. At the time the specimen of semen was obtained, the patient was found to have a stricture of the rectum. The blood Wassermann was ++ in the cholesterin antigen only. One week previous, the Wassermann test had proved negative.

Oct. 15, 1919, the left testicle of Rabbit 117 was injected with 2.5 c.c. of semen containing normal spermatozoa, and microscopically negative for *Spirochaeta pallida*. Two testicular punctures made, December 10 and January 27, respectively, were negative, and the rabbit was apparently normal. The animal was not examined again, through an oversight, until February 16, when a lesion was noticed on the left testis. There was an area of induration surrounding a dried crust about 1 cm. in diameter, and the general appearance was that of a typical receding chancre on the scrotum. Dark-field examination of the serous exudate from beneath the dried crust was negative. Puncture fluid from the testis was negative also.

Feb. 16, 1920, the excised testis was macerated and injected into the testes of Rabbits 255 and 256. Rabbit 256 died within two weeks without showing any lesions. Rabbit 255 received 3 c.c. of suspension into the right testicle and 1 c.c. into the left.

Between March 18 and June 18, thirteen testicular punctures were made and found negative for spirochetes. The testicles were normal. July 1, a small nodule, the size of a pea, was found at the upper pole of the right testicle. Puncture yielded a serosanguineous, sticky fluid containing enormous numbers of *Spirochaeta pallida* of a very thin type. The incubation period was four months in the first generation and about the same in the second.

EXPERIMENT 5.—S. L., a man, aged 18, gave a history of chancre on the penis one year before, followed by secondaries. No treatment was taken at any time. The blood Wassermann was ++.

Oct. 20, 1919, the left testis of Rabbit 131 was injected with 1.5 c.c. of semen containing normal spermatozoa and microscopically negative for *Spirochaeta pallida*. The animal remained normal, and dark-field examinations on puncture fluid from the testis were entirely negative throughout a period of more than six months.

May 19, 1920, the left testis was indurated at the upper pole, with a circumscribed orchitis and no marked enlargement. Puncture material contained numerous spirochetes. Two rabbits were inoculated intratesticularly with puncture fluid from this rabbit. Both animals died within one month showing no signs of syphilis. Rabbit 131 was found dead, July 6. The incubation period was seven months. Later generations of this strain developed in about three weeks, on an average. The speed of an initial "take" may be influenced by the number of spirochetes present in the original specimen and by the abrupt change of environment, so that too great stress cannot be placed on differences in the incubation period observed in the first generation of strains isolated.

Again it should be noted that a positive inoculation was obtained with semen from a patient whose Wassermann reaction was positive only in the cholesterin antigen. He had received treatment for three years, a considerable time prior to excision of the gland for the experiment, shortly before which the Wassermann test proved negative. In view of the fact that this man had syphilis thirteen years previously, and in the light of the findings we have reported in this instance and in one of the experiments made with inguinal glands, it is important that more stress than ever should be placed on the necessity for a series of successive negative Wassermann reactions as a guide to cure in syphilis.

III. INFECTIVITY OF BLOOD FROM LATENT SYPHILITICS

A total of seventy-three specimens have been examined with negative results. A series of thirty-six specimens defibrinated as well as clotted, duplicating a number of the entire group, was incubated for a period of from three days to four months. Inoculations with these bloods resulted negatively.

IV. INFECTIVITY OF SPINAL FLUID FROM LATENT SYPHILITICS

Thirty-one specimens of spinal fluid were injected into rabbits' testicles, with entirely negative results. The fluids showed lymphocytosis in ten cases with a negative Wassermann reaction in all but one instance. The corresponding blood Wassermann reactions were positive in all but two instances, and in these the cell count was less than eight.

V. INFECTIVITY OF NASAL WASHINGS FROM LATENT SYPHILITICS

Twenty-four specimens of nasal washings were injected and resulted negatively.

VI. INFECTIVITY OF TONSILS FROM LATENT SYPHILITICS

Owing to the highly infectious nature of the secondarily invading organisms present in tonsils, it was impossible to make an intensive study of tonsillar material. Streptococci invariably killed the rabbits of a series made with tonsils that were obtained from six different patients. The Wassermann reaction in each instance was positive, and the family history pointed definitely to syphilis. In one instance, a child, aged 10, whose father was syphilitic, a dark-field examination of a suspension prepared from the tonsils showed what appeared to be typical *Spirochaeta pallida* in considerable numbers. The other specimens were negative microscopically. Since the rabbits did not survive more than four days after intratesticular inoculation, this single observation is of doubtful value.

SUMMARY AND CONCLUSIONS

In this study, *Spirochaeta pallida* has been isolated in five instances from latent syphilitics—three times from inguinal glands (in two women and one man) and twice from the semen. The strains produced typical syphilitic lesions in rabbits' testicles and could be recovered and propagated for an indefinite number of generations. The incubation periods of the spirochetes isolated from the glands were, respectively, fifty, fifty-four and 133 days, the last being doubtful owing to an early secondary infection in the experimental animal. The two strains that were isolated from the semen developed after four and seven months, respectively.

Spirochaeta pallida was isolated from patients who gave a history of syphilis dating back eleven and thirteen years in two instances, and one year in three instances. An inguinal gland and the semen proved positive for spirochetes in the two cases first mentioned, and the glands and semen in the last named. In this series of positive results, a gland was found to be infectious in the case of a man whose Wassermann reaction had been negative, following treatment, and at the time of taking the specimen for the experiment gave a ++ reaction only in the cholesterin antigen. A second instance of this nature was found in the case of a specimen of semen which proved positive for *Spirochaeta pallida*.

As far as studies with these different strains have progressed, there is no indication that *Spirochaeta pallida* has lost in virulence for the rabbit. Detailed experiments on infectivity and other phases of experimental syphilis with these and other strains will be reported subsequently.

It appears from this investigation, and that of others, that the blood and other body fluids, excepting semen, are not infectious in latent syphilis, or if so, but rarely.

Incubation of blood from latent syphilitics did not favor any infectious property that might have existed. Thirty-six specimens, duplicates of those in the series, were incubated at 37 C. for from three days to four months before being injected into rabbits' testicles. The results were negative.

One third of the total number of spinal fluids from latent syphilitics evidenced lymphocytosis, and one gave a positive Wassermann reaction.

Tonsils could not be studied, owing to severe secondary infections that were set up in the experimental animals. In one case, a dark-field examination showed what appeared to be *Spirochaeta pallida* in an emulsion of a tonsil taken from a child with a family history of syphilis, who gave a positive Wassermann reaction, although free from symptoms or visible lesions. The rabbits failed to survive injection of material.

GENERAL SUMMARY OF EXPERIMENTS

Source of Material	Number Injected	Positive Inoculations
Blood	73	0
Blood (incubated series)	36	0
Spinal fluid	31	0
Nasal washings	24	0
Inguinal glands	14	3
Semen	17	2
Testes (postmortem)	2	0
Tonsils	6	0*

* Experiments incomplete.

The groups of patients studied were composed of those that were untreated as well as those that had received no treatment within the last two years. Between the time of taking specimens for inoculations of rabbits and the first symptoms of a suggestive history of syphilis in these patients, from one to forty years had elapsed.

Out of a total of 500 cases of syphilis which were seen at the clinic, seventy-five, or exactly 15 per cent., were definitely latent.

These investigations demonstrate the fact that those persons that give a history of an old syphilitic infection may harbor active virulent *Spirochaeta pallida* for years, and this, in the face of irregular negative Wassermann reactions or slight reactions only in the cholesterin antigen.

214 Wall Building.

Medical Social Work as a Therapeutic Factor.—Unless medical social service has a therapeutic value it does not belong in hospitals and dispensaries. The primary business of a medical institution is the cure of, or care of, patients. It can waste no time nor money on any other activity. No matter, however, how good the social worker is nor how needed social work may be in any community, no medical institution which does not give a high type of medical service should waste time or money on the maintenance of social work. And no institution will make a proper use of such a social worker unless there are on its staff physicians who understand how a social worker may be used to further their own purposes. It is the physician's business to see that his patient gets well. It is the social worker's business to bring to his aid all of her social and community knowledge, and at the same time to ask herself what other essentials are missing in the patient's life. To the physician health is all-important. To the social worker, health is of importance only as a means to an end. Without health the patient can be of no use to his family or to his town. With it he may still be worthless. In order to act justly and efficiently the social worker must understand the physical condition of the patient and be prepared to help the doctor carry out any plan for him. But in order to do this she must know more of the patient than his physical condition.—E. G. Henry, *Hosp. Social Service Quart.* **2**:443, 1920.

DIAGNOSIS OF GONORRHEA IN THE FEMALE BY STAINING METHODS

THEIR PRACTICAL VALUE

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In all inflammatory lesions of the female genital tract the causative agent should always be determined, for on this factor the prognosis and treatment are largely dependent; it also shows the necessity of instituting prophylactic measures in certain varieties of infection. In most cases the etiologic factor can be determined with a fair degree of certainty by the clinical evidence alone.

During the acute stage of gonorrhea the diagnosis, both in the adult and in the child, is generally easy. The history, the symptoms, and especially the appearance of the affected areas are usually sufficient grounds on which to base the diagnosis. In doubtful cases the profuse discharge will be found to contain numerous typical gonococci which can easily be demonstrated by staining methods.

During the chronic stage the diagnosis is much more difficult, since the subjective symptoms are often mild, or may be virtually absent, and the lesions that are present are frequently ill defined. Because of the fact that in a considerable proportion of the cases among adults the infection spreads upward and produces serious disturbance, as well as for prophylactic reasons, the necessity for treatment is evident. The difficulty in making the diagnosis during this stage of the disease, and the necessity for determining when a cure has been effected after a course of treatment, are of equal importance. It is the general practice to depend chiefly on the result of film examinations for diagnostic purposes. It is with a view to ascertaining the actual value of this method that the cases tabulated herewith have been analyzed.

During the chronic stage of gonorrhea, both in the adult and in the immature female, many difficulties present themselves, chief among which are: (*a*) The discharge is scanty—often insufficient to permit satisfactory films to be made. (*b*) Gonococci are few in number. (*c*) They are often atypical, both morphologically and tinctorially. (*d*) In the female genital tract, especially in the adult, numerous micro-organisms are constantly present, a number of which are similar morphologically to the gonococcus. As a rule, these organisms can be differentiated by Gram's method of staining, but preparations made by the ordinary anilin dyes, such as methylene-blue, are valueless for this reason. (*e*) Errors in the use of Gram's stain are easily made, and overstaining or understaining and insufficient or the too prolonged use of the alcohol will cause misleading results. Even the most carefully prepared films vary somewhat in thickness, and the amount of stain required will likewise vary according to their density. Furthermore, our observations lead us to believe that some strains of gonococci are more susceptible than others to certain stains, and some seem to decolorize more readily than others.

It can be seen, therefore, that during the chronic stage of gonorrhea the detection of gonococci by means of film preparations is by no means easy in all cases, and that many errors, the results of which are prone to be extremely misleading, may occur. For these reasons it is our belief that, in this class of cases, attempts to demonstrate the gonococcus by means of film preparations are of no value unless performed by one especially skilled in this line of work. Unless this is done the results are not only valueless, but often actually harmful, owing to the likelihood of error. Even in the hands of the most experienced, too much weight should not be placed on the findings. As we shall presently show, negative results have no significance unless they are frequently repeated, and even positive results are occasionally open to doubt. One of us has recently seen a case of vulvovaginitis in a child which exemplifies the latter point. Diplococci that were similar morphologically to gonococci had been repeatedly demonstrated in the vaginal secretions by Gram's method, and the patient had received vigorous treatment for nearly six months without result. While, clinically, a well-marked chronic inflammation was present, it was not entirely typical of gonorrhea. A further study of the case revealed the fact that the micro-organism that had previously been present was *Diplococcus catarrhalis*, an organism that is almost nonpathogenic and that closely resembles the gonococcus, both morphologically and tinctorially. In this case the inflammation had been protracted by too vigorous treatment, and as soon as this was suspended the symptoms disappeared. We have no desire to depreciate the diagnosis of gonorrhea by means of staining methods, but merely wish to point out the difficulties attendant on them in the average chronic case, and to emphasize the necessity for having skilled assistance in this department.

AIDS TO THE DIAGNOSIS OF GONORRHEA BY STAINING METHODS

In the adult the discharge obtained from the vagina is of but little value, since it often literally swarms with other micro-organisms, and even if gonococci are present, they are prone to be extracellular and atypical in both morphologic and staining properties. For this purpose much more satisfactory material can be obtained from the cervix, urethra and Bartholin's glands, since these are the structures in the lower genital tract that are especially attacked by the gonococcus. In chronic cases particular attention should be paid to the cervix, since it is from this region that the greatest number of positive film preparations are obtainable. The urethra, and particularly Skene's glands, are of next importance. An effort should be made to secure the material for examination from the depths, rather than from the surface, of the glands.

For collecting the material nothing equals a medicine dropper, the nozzle of which has been drawn out in the flame to about 6 or 8 cm. in length, and to the thickness of a fairly coarse capillary tube. This enables the operator to wipe the surface discharge from the suspected area, press out the desired material from the depths of the glands, and secure even a very minute drop of secretion that may thus be exuded. In addition to the advantage of being able to secure the exact droplet of secretion desired, this instrument insures the nontraumatization of the secretion. The drop in the capillary-like tip of the medicine dropper can be transferred to the slide and spread evenly and satisfactorily. It has previously been pointed out by one of us[1] that the frequently used method

1. Norris, C. C.: Gonorrhea in Women, Philadelphia, W. B. Saunders Company, 1913.

of employing a dry cotton swab for securing material is unsatisfactory, since one of the points in the identification of the gonococcus depends on the intracellular demonstration of the micro-organism. The dry cotton tends to enmesh the solid particles of the discharge, and thus retains the pus and epithelial cells within its substance. In this way the most important part of the specimen to be examined is retained in the swab. Furthermore, in rubbing the swab over the slide in the effort to transfer the secretion the solid particles in the discharge are likely to be broken up, and thus intracellular micro-organisms are transferred into those of the extracellular type.

For securing material for examination from Bartholin's glands, Feis [2] recommends the use of a fine wire probe, the end of which has been roughened. This probe is passed into the gland, and any secretion adhering to the end of the instrument is examined. The ordinary platinum loop is useful, but in our hands it has been less satisfactory than the medicine dropper.

For obtaining the secretion from cases of vaginitis in infants and young children, washings have given the most satisfactory results. The hips of the child should be elevated. A soft rubber eye syringe is filled partly with a weak mercuric chlorid solution and the tip is introduced through the hymen; the solution is then sucked in and forced out a number of times. At the same time the nozzle is moved around in the vagina in an effort to dislodge any particles of discharge that may be adherent to the vaginal walls. The washings are then centrifuged at slow speed and the sediment is examined. By this method the operator is enabled to secure all the discharge that is present; it is also particularly useful in chronic cases in which there is little discharge, and in determining when a cure has been effected. Its only disadvantage lies in the fact that it is time consuming. A cotton swab wet in mercuric chlorid solution, moved about in the vagina, and subsequently rolled, not rubbed, over a slide may be tried first, or the aforementioned medicine dropper, equipped with the long capillary nozzle, may be used, and if gonococci are not found, the method of examining the washings can then be employed. The wet swab rolled over the glass slide is less objectionable than the dry one, for the rolling forces out the excess of solution, and with it many solid particles are expressed. The wet swab method has the advantage of simplicity and speed. The addition of mercuric chlorid to the solution has a tendency to fix the solid particles in the discharge and facilitates subsequent staining. We are indebted to Dr. John A. Kolmer for the latter suggestion.

Mention has previously been made of some of the difficulties that are likely to be encountered in the staining and identification of the gonococcus. It is of the utmost importance that good films be obtained. The slide should be clean, and the material should be spread evenly and thinly over it. It is advisable to make a number of slides, and to select the best for staining. In the case of adults, the slides should be labeled with the area from which the suspected material was secured. Unless gonococci are demonstrated, a number of slides should be stained and examined.

A preliminary slight traumatization of the suspected area and the application of a 10 per cent. solution of silver nitrate, or, in the case of the cervix, the solid silver stick, greatly increases the likelihood of securing gonococci for staining purposes. This method of treatment causes an irritation and increases the amount of discharge. The material for examination should be secured from twelve to twenty hours later. If too long a time is allowed to elapse after the preliminary application of silver, the object will be defeated, and gonococci will be found to be reduced in number. Sufficient time should, however, be allowed to elapse for a reaction to take place, and for the major part of the silver to disappear. Our records show that the preliminary irritation increases the possibilities of demonstrating the gonococci in chronic cases very materially. Material obtained immediately after the cessation of a menstrual period or just as the lochia begins to diminish after a pregnant uterus has been emptied is especially likely to contain gonococci. At these periods the secretory activity of the glands is increased, and gonococci from the depths of the glands are swept to the surface and thus more readily secured.

Findley [3] studied a large series of cases, in all of which the condition was ultimately proved to be gonorrhea. In only 30 per cent. of these women was the gono-

ANALYSIS OF SEVEN HUNDRED AND NINETY-FOUR EXAMINATIONS FROM CASES PRESENTING CLINICAL EVIDENCES OF GONORRHEA

	Positive	Negative	Total
ADULTS			
1. All cases except those comprising Section 4:			
Acute	54	9	63
Chronic	27	180	207
Total	81	189	270
2. From the gynecologic dispensary of the Hospital of the University of Pennsylvania:			
Acute	22	6	28
Chronic	9	106	115
Total	31	112	143
3. Private cases:*			
Acute	32	3	35
Chronic	18	74	92
Total	50	77	127
4. Cases showing the advantage of preliminary irritation:			
(*a*) Cases with preliminary chemical and traumatic irritation:			
Chronic	20	44	64
(*b*) Cases (from Section 1) with no preliminary chemical or traumatic irritation:			
Chronic	27	180	207
VULVOVAGINITIS			
5. Children and infants (all cases except those in Section 7):			
Acute and chronic	169	230	399
6. Private cases:			
Acute	37	4	41
Chronic	31	69	100
Total	68	73	141
7. Cases showing results of a preliminary irritation compared with the ordinary method of securing material:			
(*a*) With preliminary chemical and traumatic irritation:			
Chronic	28	33	61
(*b*) Cases (from Section 6) with no preliminary irritation:			
Chronic	31	69	100

* Compared with Section 2, Section 3 emphasizes the advantage of care in this work. In nearly all the cases in Section 3 the material was obtained, stained and examined by one of the authors. Special effort was made to obtain material from the depths of the glands, and a number of slides were examined before the smears were pronounced negative. In this series there were a certain number of what may be termed doubtfully positive results: i. e., specimens that contained organisms suggestive of gonococci, but not entirely typical. These have been classified under the negative group, although they are generally treated as if they were positive. Numerous pus cells, especially in the absence of many micro-organisms, are always suggestive of a gonorrheal infection.

2. Feis, O.: München. med. Wchnschr. **67**: 755 (June 25) 1920.

3. Findley, P.: Am. J. Obst. **80**: 421 (Oct.) 1919.

coccus demonstrated by staining methods at the first examination, and in isolated cases it was not found until the eighth to the fifteenth successive daily examination. King [4] was able to demonstrate the gonococcus in film preparations in only 60 per cent. of a series of 500 women, all of whom presented clinical evidences of gonorrhea. In a number of positive cases gonococci were found only after repeated examination.

In reviewing these results it should be remembered that in both Findley's and King's series no attempt was made to separate the acute from the chronic cases. It is probable that both series contained a definite percentage of acute cases, and as gonococci are easily demonstrated in the acute stage, this fact should be considered. If, in these series, the cases had been so separated, the proportion of positive film examinations among the chronic cases would without doubt have been much lower. Furthermore, in both series the bacteriologic tests were performed by an expert. It can readily be seen how little reliance can be placed on a single negative finding in the office examination as generally performed.

In the accompanying table the figures refer to the number of individual examinations and not to the number of patients.

In the hands of a trained bacteriologist, cultural methods of diagnosis are satisfactory. As a general rule, the gonococcus is grown with difficulty in artificial mediums, and this is especially true of material obtained from the female genital tract during the chronic stage of the infection, owing to its contamination by other micro-organisms. Swartz and Davis [5] and others have reported excellent results from cultural methods, but special training is required for their performance. The complement fixation test in its present stage is of little or no practical value in ordinary cases. It is possible that the precipitin test recently reported by Meader and Robinson may prove of great practical aid.

CONCLUSIONS

1. When dealing with inflammatory lesions of the lower genital tract, it is advantageous to determine the type of infection present.

2. During the acute stage of the gonococcal infection the diagnosis is generally made without difficulty, as the clinical signs are more or less significant; if doubt exists, film preparations can be depended on.

3. Because of the certainty with which a positive diagnosis by staining methods can be made in the acute stage, and the many difficulties encountered in the chronic stage, it is especially important that the variety of infection present be ascertained during the acute stage. Unfortunately, many cases are not seen during the early stages, and a positive diagnosis is therefore arrived at only with difficulty.

4. During the chronic stage the clinical signs are less characteristic than during the acute stage.

5. The examination of film preparations is less satisfactory.

6. The presence of gonococci can be demonstrated by film preparations from every case if a sufficient number of correctly performed examinations are made.

7. A single negative smear examination is without significance. In such a case the chances of demonstrating gonococci are about three or five to one according to the skill of the examiner.

8. Even under the most favorable circumstances, positive film examinations can be obtained in only a relatively small proportion of cases.

9. Unless safeguarded by the Gram stain or one of its modifications, smear examinations are valueless.

10. Even with Gram's stain, errors in diagnosis may occur. Differences in the thickness of the preparations, slight overstaining or understaining, etc., may lead to extremely misleading results.

11. Owing to the many difficulties surrounding this form of diagnosis, we believe that unless the test is performed by one experienced in the work, its results are of no value, and are often actually misleading.

12. Clinical evidence is of far greater value than staining methods, even when the latter are performed by an expert.

13. From a practical standpoint all cases should be regarded as of gonococcal origin until proved otherwise.

14. Without desiring to underrate the value of staining methods in diagnosis, we nevertheless believe that their usefulness has been considerably overestimated.

4. King, W. W.: Brit. M. J. 1:364 (March 13) 1920.
5. Swartz, E. O., and Davis, D. M.: Methods of Cultivating the Gonococcus and of Testing Germicidal Agents Against It, J. A. M. A. 75:1124 (Oct. 23) 1920.

THORNWALDT'S DISEASE AND CHOREA

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A report of this case is of interest not alone because of the rarity of the pathologic lesion involved, but also because the latter was found to be the source of focal infection which bore a direct etiologic relationship to chorea, as was proved clinically by the fact that removal of the chronic focus of infection resulted in the cure of the chorea.

That chorea is due to an infection is manifested clinically by the frequent sequence of tonsillitis and acute rheumatic fever with chorea or endocarditis. Chorea has also been produced experimentally in animals by intravenous injection of various strains of streptococci, together with the production of endocarditis and acute articular rheumatism.

Floyd [1] found a much higher percentage of carriers of certain types of virulent streptococci in the substance of the tonsils and about the teeth in cases of chorea than occur in normal controls.

REPORT OF CASE

History.—A girl, aged 15, referred to me by Dr. F. R. Derengowski for the removal of tonsils and adenoids on account of nasal obstruction and chorea, dated the onset of her trouble eighteen months before, when there were involuntary movements and twitching involving the head and face. During the last six months they involved practically the whole body and had been especially exaggerated during the last month, the patient being unable to lie quietly in bed. During all this time she had been under efficient medical supervision, but there had not been noticeable improvement.

Physical Examination.—The patient was well nourished. There were involuntary, purposeless movements and twitching of the face, head and the upper and lower extremities. She was a mouth breather, and spoke with a distinct nasal twang. The tonsils were small and embedded. Pressure over the tonsils did not cause the expression of any material from the tonsillar crypts. Digital examination of the postnasal space revealed the presence of adenoids. The physical examination was otherwise negative.

Operation.—The indication for the removal of adenoids was apparent, but I doubted the necessity for removing the tonsils.

1. Floyd, C.: A Study of Streptococci Obtained from the Mouth in Cases of Chorea, J. M. Res. 42:467 (May) 1920.

as they presented no evidence of disease, nor was there any history of throat trouble. Nevertheless, owing to the wishes of Dr. Derengowski, both the tonsils and adenoids were removed under general anesthesia, July 9, 1920. In the removal of the adenoids, the La Force adenotome was used. On examining the adenoid mass contained in the adenotome, I found that it completely filled the cavity of the adenotome, together with a substance the color of brick dust and the consistency of thick cream. In the middle of the cut surface of the adenoid mass were the remains of what appeared to be a canal which had been incised longitudinally by the knife blade of the adenotome. The canal was cut hemispherically. It measured 3 mm. transversely and 15 mm. longitudinally. The lining of the canal was 0.5 mm. thick, and was smooth and white. The canal contained a whitish, purulent fluid. Microscopic examination of a smear of this fluid revealed many pyogenic organisms. Cultures were ordered, but no report was obtained. The specimen was sent to the pathologic laboratory for microscopic examination with instructions to make the section through the canal. Owing to a misunderstanding, the section was not made as ordered, and therefore failed to show anything except adenoid tissue. The anatomic diagnosis was that of Thornwaldt's disease, which is characterized by the presence of a suppurating canal or sinus, in the recessus medius, which is the groove between the lateral halves of the adenoids.

Postoperative Course.—Three days after the operation, the choreic movements became progressively improved, until the seventh day, when all involuntary movements and twitching completely disappeared and have not since returned, a period of more than five months to date. Following the operation no medicinal treatment was given.

CONCLUSIONS

1. The chorea was due to focal infection.
2. The removal of the focus of infection resulted in the cure of the chorea.
3. In every case of chorea, a complete investigation should be made with regard to focal infection; and when this is found it should be eliminated thoroughly.

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THE TREATMENT OF HEREDITARY SYPHILIS

DESCRIPTION OF METHOD, WITH DISCUSSION OF RESULTS AFTER FOUR YEARS' USE *

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My chief purpose in this article is to outline a plan of treatment for hereditary syphilis which has been in use in the children's clinic of the Washington University Dispensary and in the St. Louis Children's Hospital for a period of four years. The value of this report lies not in any uniqueness of the plan, but rather in the fact that we have used the plan for a sufficient period and in a sufficient number of cases to make certain estimates as to end-results and also in the fact that it concerns *hereditary* syphilis, about which so little has been recorded recently in regard to successful therapy.

THE ROUTINE PLAN

The child attends the clinic once a week. At each visit, 0.03 c.c. (½ minim) of a 1 per cent. solution of mercuric chlorid for each kilogram (2⅕ pounds) of body weight is injected intramuscularly. Mercury with chalk is prescribed three times daily by mouth in doses ranging from 13 mg. (⅕ grain) for small infants to 100 or even 130 mg. for the largest children. A laxative effect is avoided by decreasing the dose when necessary.

Every two months there is started a course of three intravenous injections of arsphenamin given at weekly intervals. The dosage is 0.01 gm. for each kilogram of body weight. Mercury administration is not interrupted for the arsphenamin course.

A rest period of from four to eight weeks is given during the first year of treatment, provided the attendance has been sufficiently regular.

Infants are required to continue such a routine for at least one year, and older children for at least two years, regardless of what the Wassermann reaction shows. Treatment is continued in the same manner for as much longer than this as seems indicated by the clinical signs or the Wassermann reaction. We have thought it desirable to continue treatment for six months or longer after all evidences of activity, including the Wassermann reaction, have disappeared.

It has been our custom to precede any arsphenamin therapy by examination of the cerebrospinal fluid. One object of such examination is the prevention of a Herxheimer reaction in the central nervous system. Though we have never witnessed such a reaction, we have no reason to doubt its possibility. When the physical examination or the cerebrospinal fluid reveals evidence of central nervous system involvement, or when for any reason the spinal puncture is delayed, arsphenamin therapy is preceded by several weeks of mercury medication alone. Herxheimer reactions elsewhere than in the central nervous system are relatively unimportant.

A fact that was revealed by routine cerebrospinal fluid examination is that practically one third of all infants or children with hereditary syphilis have involvement of the central nervous system.[1] Our experience in the treatment of hereditary neurosyphilis is similar to that published by a number of observers in the case of acquired neurosyphilis. The earlier the treatment is begun, the more likely is the central nervous infection to respond to such a plan as is outlined above; and, generally speaking, the later it is begun, the less likely is it to respond satisfactorily. As a consequence, a further addition to our routine has been the administration of intraspinal medication to those patients whose central nervous infection failed to show any evidence of response after a period of several months of intravenous and intramuscular therapy. We realize that the rationale and efficacy of intraspinal treatment is in dispute. It is not desired to enter here into the merits of the arguments except to state that in my opinion some of the arguments are founded on inadequate or conflicting fundamental evidence. We have used this route for medication as a routine and have no regrets. In fact, it has been our impression that much good has been accomplished. We have relied chiefly on the Swift-Ellis method of administering inactivated serum arsphenamized in vivo, occasionally using mercurialized human serum according to the method of Byrnes. Recently we have alternated these two methods in each case. We have adhered fairly closely to the accepted interval of one week between injections, and have given a course of three injections at each admission to the hospital. The routine systemic treatment has not been interrupted for the intra-

* From the Department of Pediatrics, Washington University School of Medicine and the St. Louis Children's Hospital.

1. Jeans, P. C.: Cerebrospinal Involvement in Hereditary Syphilis, Am. J. Dis. Child. **18**: 173 (Sept.) 1919.

spinal treatments. Our ideal has been to repeat the courses of intraspinal therapy every two or three months. This has not always been attained. The physical disability of those patients of school age who are not more or less hopeless cases for expectation of benefit has been such that school has been possible and profitable. For this reason, so far as practicable, advantage is taken of the holidays and vacations. To the present we have never attempted intraspinal therapy without having the patient in the hospital.

An essential part of the management of a syphilitic clinic is one or more good social workers. Such a worker checks delinquency in attendance, insures that children of the family, and, if possible, the parents, are examined, and if necessary treated, and is useful in innumerable ways to make the treatment continuous to the point of effectiveness. Some parents are indifferent, and a few even antagonistic to what the physician thinks is for the child's welfare. After a due amount of persuasion has failed of effect, it has been and is our custom to refer such families to the Juvenile Court for action on the basis of child neglect. This phase was dealt with at some length in a former publication.[2]

EXCEPTIONS TO THE ROUTINE PLAN

In former publications [3] we have stressed the importance of breast feeding in syphilitic infants. Malnutrition occurs with such frequency in syphilitic infants that it may be classed as one of the symptoms of the disease. In resorting to artificial feeding, the utmost care and patience are necessary. For this reason syphilitic infants, so far as possible, should be under the care not only of one who is proficient in the treatment of syphilis, but also one who is expert in the management of infant nutrition. Often the nutrition improves coincidently with the initiation of antisyphilitic treatment. On the other hand, occasionally it will be found that treatment, even of the intensity here advocated, will have a harmful effect on the nutrition. Under such circumstances the malnutrition has been considered as of greater importance than the syphilis, and the treatment has been greatly modified or even suspended for a time.

In starting treatment in infants with florid syphilis, it has been found unwise to begin with full doses of arsphenamin. Theoretically, the ill effects are due to the sudden killing of large numbers of spirochetes. Practically, what may happen is the death of the infant within a few days of the injection. In florid cases, if arsphenamin is used in the first few weeks of treatment, it should be used in fractional doses. A little later, full doses as advocated may be given.

In certain instances the institution of more intensive arsphenamin therapy has seemed desirable, as, for example, in the case of patients with neurosyphilis whose parents refuse to permit intraspinal treatment. Such patients are often required to attend the clinic three times weekly for arsphenamin, receiving from three to five full doses at two or three day intervals.

The exceptions to the usual routine here cited serve to emphasize the fact that if human patients are to be fitted into a routine, it must be done guardedly and with a certain amount of judgment. Local treatment of affected parts is often of considerable importance, as, for example, in the case of iritis, parenchymatous keratitis, or broken down bone gummas with secondary infection.

COMMENT ON THE ROUTINE PLAN

In 1914 we published a plan of treatment,[4] in which we said:

> The course of treatment varies somewhat, but, with the usual case presenting an acute lesion, is in general as follows: Three or four intravenous injections of neosalvarsan are given with a gradually increasing dosage two or three days apart. Then mercury (gray powder) is started, with small doses, which are gradually increased until the patient is taking a fairly large dose. In a few weeks this is interrupted for a short time and then repeated. . . . The mercurial treatment is continued for an indefinite period of time according to the requirements of the individual case, and in general until a negative Wassermann reaction is obtained, if this is possible.

By means of this working plan we were successful in promptly clearing up all clinical manifestations of active disease in most instances. Certain cases of parenchymatous keratitis were slow to respond, and some cases of neurosyphilis were not benefited in the least. We not infrequently obtained persistently negative Wassermann reactions in infants but not in older children. Further, the plan was an ideal which could be and was attained in the wards, but which was in some respects difficult in the clinic and consequently was not often realized. Remaining from school for attendance at the clinic three times a week is usually seriously opposed by the parents and the child. No doubt the alert attendance officer is a strong moral force back of the objection. As a rule, dispensary patients cannot be relied on to take medicine regularly over a long period, whether it is by inunction or by mouth. They frequently admit that they have taken none of the prescribed remedy for a long time. As a result of the objection to absence from school we resorted to the weekly visit, the schoolchild coming on Saturday. Because of the uncertainty of oral medication we used intramuscular injections of mercury, with which we had the satisfaction of knowing that the patient received at least a certain amount of mercury. In addition to these changes, arsphenamin is now given more systematically over a longer period. Intraspinal treatment in selected cases has been a further addition to our routine.

The present routine has been used in the treatment of approximately 250 syphilitic children. It has proved to be practical and has been followed by a very large proportion of our patients. It represents a gradual evolution in an eight year period of more or less intensive observation of hereditary syphilis. Our conclusion from a review of the literature is that relatively few clinics for children in this country have in operation a system as effective. No special credit is due our clinic or any similar clinic. Rather, the wonder is that in general the treatment of hereditary syphilis has lagged so far behind the accepted methods for treating acquired syphilis. There are really no essential differences between the two infections. I have discussed these differences elsewhere.[5]

My own criticism of the routine here presented is that it probably is not yet sufficiently intensive. For a number of years in selected cases we have administered arsphenamin in full doses at forty-eight hour intervals, and more recently at twenty-four hour inter-

2. Jeans, P. C., and Butler, Elsa M.: Hereditary Syphilis as a Social Problem, Am. J. Dis. Child. 8: 327 (Nov.) 1914.

3. Veeder, B. S., and Jeans, P. C.: Observations on One Hundred Cases of the Infantile Type of Hereditary Syphilis, Am. J. Dis. Child. 11: 177 (March) 1916. See also Footnote 2.

4. Veeder, B. S., and Jeans, P. C.: The Diagnosis and Treatment of Late Hereditary Syphilis, Am. J. Dis. Child. 8: 283 (Oct.) 1914.

5. Jeans, P. C.: The Reactions of Syphilis in the New-Born and Growing Child, Am. J. Syph. 4: 473 (July) 1920.

vals, and have observed no ill effects. The published evidence as to the rate of excretion of arsphenamin is still too conflicting to use such a basis for the determination of a proper interval. The twenty-four hour interval is not new. It has been used by several clinicians, apparently without harm. However, such intensive therapy is not to be advocated for general routine use until it rests on a better scientific basis in regard to safety for the patient, though it already is indicated for the purpose of penetrating to "dark corners" and more effectively reaching and killing spirochetes.

There is a current clinical impression of wide circulation that neo-arsphenamin is somewhat inferior to arsphenamin. I know of no well controlled observations as to their relative values. We have given hundreds of injections of both drugs and have been able to discern no difference in their action clinically. Neo-arsphenamin is usually given in 50 per cent. greater dosage than arsphenamin. Granting that the two drugs are of equal value therapeutically in proper dosage, the choice between them becomes merely a matter of preference on the part of the administrator. The advantages of neo-arsphenamin are its greater ease of solution, the lack of necessity for neutralization, and the fact that it can be administered safely in small bulk. It is asserted that reactions are less frequent after neo-arsphenamin than after arsphenamin. However, the only fatal reaction we ever had (hemorrhagic encephalitis) followed a second injection of neo-arsphenamin, and the most alarming immediate reactions we have seen have occurred after neo-arsphenamin. In intravenous medication in infants and young children, the mechanical difficulties are much more easily overcome by the use of a syringe than by a gravity method. In order to use a syringe for arsphenamin administration it has been our custom to use a 1:40 dilution. Though many good authorities hold that there is a danger in giving such a concentrated solution, we never yet have had reason to regret its use. For those who object to such a concentration and at the same time wish to use a syringe, neo-arsphenamin is the drug of choice, since all agree that it can be given safely in a small volume.

Because of the current practices in certain clinics it seems desirable to discuss briefly the route of administration of arsphenamin and allied products. In our clinic the intravenous route exclusively is used. We have given the intramuscular route a trial, using neo-arsphenamin, and completely discarded it about seven years ago. It is suggested to those who wish to use neo-arsphenamin intramuscularly that before trying it on infants they first use it for adults or older children in order to determine the amount of pain inflicted. It is our experience that exceedingly painful reactions develop, and many times have we had to resort to morphin for relief after such an injection. In some instances extensive infiltrations occurred which remained for months or even a year or more. In one case an abscess and in one a slough developed at the site of injection.

In the intravenous administration, any visible vein of sufficient caliber may be used with impunity. In older children the arm veins are just as accessible as in the adult. In most young children and infants the external jugular veins are readily available when the child lies with the shoulders elevated and the head extended and rotated. Suitable scalp veins are almost always present, especially in syphilitic infants. Though some of our patients have presented difficulties because of obscure veins, none have been deprived of arsphenamin for that reason; nor have we ever found it necessary to cut down to find a vein. One secret of success is a good outfit, especially a sharp needle; another is good assistance in the case of the struggling child. Not unimportant also is a certain amount of mechanical ability on the part of the operator. Some operators remain inexpert despite long practice, and often in the case of easily visible veins. The use of the longitudinal sinus in the treatment of infants is mentioned only to condemn it or at least to sound a warning. The sinus is readily accessible, and it is relatively an easy matter to enter it fairly with a needle. The danger lies in the possibility of an "unfair" entry. We have given many arsphenamin injections by way of the longitudinal sinus. We were stopped finally by an accident resulting from the injection of part of the solution outside the sinus. This occurrence was at least in part due to rachitic asymmetry of the head. A similar accident eventually has happened to every one using this route with whom we have exchanged experiences.

We have used iodid medication in only a few instances. Though iodids presumably have no effect on spirochetes, they are often useful in certain types of tertiary lesions, such as for the relief of pain in osteoperitonitis and as an aid in the resorption of gummatous deposits. As to pain, we have found that arsphenamin gives rapid and adequate relief in arthritis and osteoperiostitis. Likewise, resorption of gummatous processes apparently has taken place sufficiently rapidly without iodid.

RESULTS

It is obviously impracticable to record here a large number of case reports with the necessary accompanying details. Some of our clinic staff are actively engaged at present in looking up and examining all patients who have been under treatment in the last eight years in order to determine their present condition. This survey, with accurate statistical data, will be available in the near future.

Some of our infant patients died, a not uncommon occurrence despite the method of treatment. The prognosis of infantile syphilis as to life has been dealt with at some length in a former publication.[6] Other patients have been lost from view for various reasons. Some, who have continued treatment faithfully, though becoming Wassermann negative remain in a hopeless mental state. Others are handicapped by blindness, deafness, paralysis, ankylosis or facial deformity. But there is a brighter side also. Many of our patients have been made Wassermann negative and are as bright, healthy and strong as though they never had been affected. Leaving out of consideration the infant mortality of syphilis, it is my opinion that possibly with rare exceptions all patients with hereditary syphilis can be made Wassermann negative with sufficient patience and perseverance. This is much more readily accomplished in infancy than in later childhood. Whether or not a continuously negative Wassermann with absence of all signs of activity signifies a cure of the infection is still an open question. Our own observations include no renewed signs of activity in any patient after the Wassermann test has become continuously negative under treatment.

Since it is within the realm of possibility that all or nearly all patients with hereditary syphilis may be

6. Jeans, P. C.: Syphilis and Its Relation to Infant Mortality, Am. J. Syph. 3: 114 (Jan.) 1919.

entirely freed from their infection, the prognosis then depends on the amount of damage done by the infection prior to its eradication. The only damage which is completely and utterly irreparable is that involving the central nervous system. Damage elsewhere usually causes little or no real handicap. Though one third of all syphilitic infants give laboratory evidence of involvement of the central nervous system, only one ninth of them give clinical evidence. All of those with merely laboratory evidence, and many of those with clinical evidence, respond readily to the method of treatment here advocated. Intraspinal treatment ordinarily is unnecessary under 2 years of age. If the syphilis is well treated in infancy, the number of syphilitic defectives will be so small as to be almost negligible.

The situation with older children is somewhat less hopeful. Laboratory evidence of central nervous involvement is found in about one third of the older children, and of these two thirds show clinical evidence of such involvement. These respond with greater difficulty to ordinary methods of treatment than do infants. By more persistent treatment, and occasionally by the aid of intraspinal treatment, all or nearly all can be freed from laboratory evidence of infection. However, in those with clinical evidence of infection the damage has been progressing for a number of years, and irreplaceable specialized tissue has been destroyed or permanently impaired. Such children may be left with mental defect, paralysis, blindness, epilepsy or deafness.

SUMMARY

With the exception of intraspinal medication required in but relatively few cases, the treatment here advocated is simple and easy to carry out. It has been in use in our clinic for the last four years, and has been demonstrated to be effective as judged by our present standards.

PRENATAL INFESTATION WITH PARASITIC WORMS *

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BALTIMORE

In the literature there are few records of prenatal infestation with parasitic worms. I have found indisputable records of such infestation in sheep with the lung worm, *Dictyocaulus filaria*, and in man with the hookworm and the Oriental blood fluke, *Schistosoma japonicum*. Since the larvae of a number of the parasitic worms of man wander widely in the body before finding their final location, and are in many cases carried in the blood stream, prenatal infection might be expected to occur often. It seems probable to me that such infestation is not so rare as the small number of case records would suggest, and that the small number of records is due to a failure to look for infestation in very young infants. It is a fact that where fecal examinations for hookworm disease are carried on, examinations are rarely if ever made of very young babies. Therefore it seems worth while to call the attention of physicians to the possibility of prenatal infestation in man by certain species of parasitic worms, with the hope that some of those who are carrying on work in places where parasitic worms are frequent will look carefully into the matter. Howard,[1] in reporting a case of prenatal hookworm infestation, has already emphasized the importance of further investigations on prenatal infestation in hookworm disease. In the present paper I will outline the cases in which I have found reported prenatal infestation with parasitic worms, and will call attention to those parasitic worms of man in which such infestation would be possible on account of the character of the life cycle.

The species in which prenatal infestation has been most carefully worked out is *Schistosoma japonicum*, the Oriental blood fluke. Since I have not found this work taken up outside the Japanese [2] language, I will discuss it here in some detail. Fujinami and Nakamura,[3] in 1911, reported the finding of *Schistosoma japonicum* in the fetus of a dog suffering from schistosomiasis. Narabayashi,[4] in 1914, caused pregnant animals to become infested with the cercariae of *S. japonicum*. In one dog thus infested he found the parasites in five out of seven embryos. In a later series of experiments, Narabayashi [5] was able to find fourteen young specimens of *S. japonicum* in the placentas of two pregnant guinea-pigs that had been experimentally infested. To find these worms it was necessary for him to examine about 20,000 sections of the placenta. He found the young schistosomes most frequently in the blood vessels running from the placenta to the embryo. He concluded, therefore, that the larvae of *S. japonicum* in prenatal infestation are carried to the placenta in the blood stream, migrate through the thin membrane separating the circulation of the mother from that of the fetus, and are carried to the embryo by its own blood vessels. The shortest time after infestation in which the worms were found in the fetus was seventeen hours. This author [5] also examined the feces of twenty-two new-born babies in an endemic area and found the eggs of *S. japonicum* in three. The mothers gave a history of having worked in the rice fields during their pregnancy.

Neveu-Lemaire [6] reported two cases of prenatal infestation in lambs with the common lung worm, *Dictyocaulus filaria*. In the first case the adults of this species were found in the trachea of a lamb that died four days after birth, and in the other they were found in the trachea of a fetus taken from a mother heavily infested with the parasites.

Howard,[1] in 1917, reported an undoubted case of prenatal infestation with hookworm in a negro child in British Guiana. The hookworm eggs were found in the feces of the child fourteen days after birth, which is entirely too short a time for the development of the hookworm, even if infestation after birth had been possible. The mother had a severe case of hookworm disease and gave a history of ground itch during pregnancy. Howard also notes that in 1916 there was called to his attention a considerable number of cases of hookworm disease in infants aged 1 year or less in

* From the Department of Medical Zoology of the School of Hygiene and Public Health of the Johns Hopkins University.

1. Howard, H. H.: Prenatal Hookworm Infection, South. M. J. **10**: 793-795 (Oct.) 1917.
2. The Japanese investigations on this subject were made available to me through the help of Dr. Sadamu Yokogawa, professor of pathology of the Medical School of Formosa.
3. Fujinami, A., and Nakamura, H.: On the Prophylaxis of Schistosomiasis and Some Investigations on Infection with This Disease (Japanese), Chugi Iji Shimpo, 1911, No. 753.
4. Narabayashi, H.: On Prenatal Infection with Schistosoma Japonicum (Japanese), Verhandl. d. jap. path. Gesellsch. (Japanese) **4**, 1914.
5. Narabayashi, H.: A Contribution to the Knowledge of Schistosomiasis in Japan (Japanese), Kyoto Igaku Zassi **13**, Nos. 2, 3, 1916.
6. Neveu-Lemaire: Strongylose bronchique congénitale du mouton, Compt. rend. Acad. d. Sc. **154**: 1211-1312, 1913.

Ceylon. He writes in this connection: "In these cases the apparent clinical manifestations were out of proportion to the degree of infection and the length of time these children could have had the disease had they acquired it in the usual way and postnatally."

It would seem possible that prenatal infestation might occur with any parasitic worm in which there is a wandering of the larvae in the body of the final host. The recent discoveries of the wandering of the larvae of *Ascaris lumbricoides* and related forms have suggested that migrations of nematode larvae in their final hosts are more common than has been suspected. These data serve to increase the significance of studies on prenatal infestation. It is worth while in this connection to mention briefly those of the parasitic worms of man in which the life history is such that prenatal infestation is a possibility.

Among the trematodes of man besides those of the schistosome group there is only one, *Paragonimus westermanii*, in which there is wandering in the final host. Since the larvae of *P. westermanii* are much larger than those of the schistosomes, grow rapidly as they wander, and migrate by way of the tissues rather than the blood stream, prenatal infestation with this form, while it might be possible, would seem to be very improbable.

Among the cestodes, the wandering habit is found only in the development of the bladder worm stage. Since the onchospheres are very small and are carried by the blood stream, the infestation of a fetus with the bladder worm stage would not seem to be difficult. In man, the possibility of such infestation would be limited to those species of which the larval stages invade the tissues, as the echinococcus and occasionally the larval stage of *Taenia solium*. I have found no references to prenatal infestation with echinococcus, but there is every reason to believe that such infestation could come about.

It is among the nematodes that prenatal infestation seems to me to offer the most important problem. I believe that with further studies it will be found to be not infrequent with hookworm. Other species in which such infestation might occur on account of what we know of the migrations of the larval stages are *Strongyloides stercoralis, Ascaris lumbricoides* and possibly the various species of the *Filaridae*. It seems possible also that the wandering habit of the larvae is a part of the life cycle of *Trichuris trichiura*[7] and other human nematodes, which would make possible prenatal infestation in these forms also.

7. Neshi has recently demonstrated in a paper in Japanese that the larvae of Trichuris depressiscula, the dog whipworm, wander in the final host.

Queensland (Australia) Health Report.—In the Queensland Government Lazaret for Lepers, on Peel Island, the number of inmates varied from forty-six to forty-one during the year, and comprised nineteen colored persons and twenty-two whites of which eighteen were natives of Australia. Six new cases were admitted; eight died in the course of the year and three escaped. Four types of the disease were classified, namely, tubercular, nodular, anesthetic, and mixed. In regard to venereal diseases, a system of notification is in force in consequence of which over 2,000 cases have been brought to the notice of the department, while over 400 certificates of cure have been issued. Registration of nurses is in full operation, and according to the report of the registration board a total of 134 certificates, as against 149 in the preceding year, have been presented after examination for midwifery and mental nursing.—*Med. Officer* **24**:223, 1920.

Clinical Notes, Suggestions, and New Instruments

A NEW PROCEDURE FOR DIAGNOSING URETERAL STRICTURES IN THE MALE

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Since the introduction of my technic, two years ago,[1] for diagnosing ureteral strictures in the male, various problems have presented themselves, whereby an improvement has become necessary. The technic here described will meet all obstacles and allow for accuracy in the diagnosis of ureteral strictures in the male.

I use either a No. 19 F. or 26 F. Brown-Buerger indirect, close vision, operating cystoscope and a 6 F. dry roentgenographic catheter with a pin in the proximal end to keep the wax from dropping in the proximal eyelet of the catheter. Some melted beeswax is dropped on the catheter about 0.5 cm. from the proximal end, and then the catheter is twisted between the fingers until the wax hardens (about one or two seconds) and there is a smooth, even wax bulb. The desired size can be made by the addition or subtraction of wax. I use for diagnosis an 8 + or 9 F. bulb, and for treatment increase the size up to an 18 F. bulb (Fig. 1). The catheter is then placed in cold mercuric chlorid solution, 1 : 1,000, for ten minutes. The urethra having been thoroughly cleansed and anesthetized with 5 per cent. procain, the catheter is then passed retrograde into the cystoscope, the distal end of the catheter first being passed into the proximal

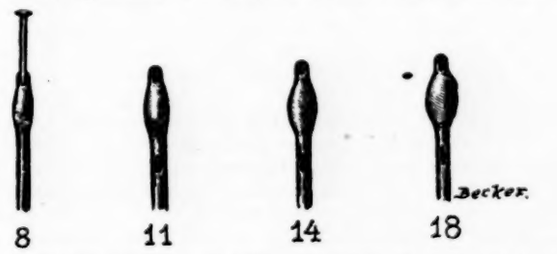

Fig. 1.—Various sizes of wax bulbs employed in diagnosis and treatment.

Fig. 2.—Wax bulb catheter in the cystoscope as it is passed into the bladder.

end of the cystoscope, through the sheath with the telescope in it. The catheter therefore is passed in the groove of the telescope and then through the cap with a single opening for the catheter, as shown in Figure 2. The wax bulb catheter is next passed into the bladder and then followed by the cystoscope containing the distal end of the catheter. The catheter curls up in the bladder and is gradually withdrawn until the bulb is seen. The ureteral opening is next located and the wax bulb catheter is passed into the desired ureter. If no obstruction is encountered, the catheter is passed up for about 8 inches and gradually withdrawn, the location of any "hang" being noted.

The method is ideal, as it serves these purposes:

Urine can be collected for examination. A renal functional test can be given, if this is desired. Since a roentgenographic catheter is employed, a roentgenogram can be taken and the line of the ureter obtained. The pelvic capacity can be

1. Goldstein, A. E., in discussion on Braasch, W. F.: Dilatation of the Ureter and Renal Pelvis, J. A. M. A. **73**: 731 (Sept. 6) 1919.

determined by injecting fluid into the kidney. A shadow-casting substance may be injected and a pyelogram made to verify the diagnosis of a stricture (an important procedure) made by withdrawing the bulb and obtaining a "hang." Finally, the wax not having been disturbed, should a calculus be present, a scratch will be observed.

In the employment of this method, if a definite stricture is present, the "hang" is not only felt but seen; that is, as the catheter is withdrawn and the bulb caught at the obstruction, all tissues in front of the stricture are drawn forward, and this can be seen through the cystoscope.

330 North Charles Street.

A CLINICAL METHOD FOR THE DETERMINATION OF BLOOD SUGAR IN MINUTE QUANTITIES OF BLOOD*

ISRAEL S. KLEINER, PH.D., NEW YORK

This method is based on Benedict's[1] most recent technic, modified for use with a new microcolorimeter. The instrument was developed by Mr. R. E. Klett, based on suggestions by Prof. S. R. Benedict. My work was begun at Professor Benedict's suggestion and with his cooperation.

The instrument (Fig. 1) carries a vertically sliding eye-piece in front of a diaphragm having two vertical slits, through which the light passes. The eye-piece carries with it, in back of the diaphragm, a round clip in which one places a standard graduated test tube containing the unknown solution. Alongside of the test tube is a wedge, made by grinding a test tube and fusing it on to a ground-glass plate (Fig. 2). The wedge contains the standard color and is sealed by fusion. As the wedge is behind one slit and the unknown solution behind the other, the two can be compared by observation through the eye piece, which contains a lens and prism. By moving the eye piece (and with it the unknown) up and down, an exact match is found and a reading is made on the scale. Figure 3 shows a cross-section.

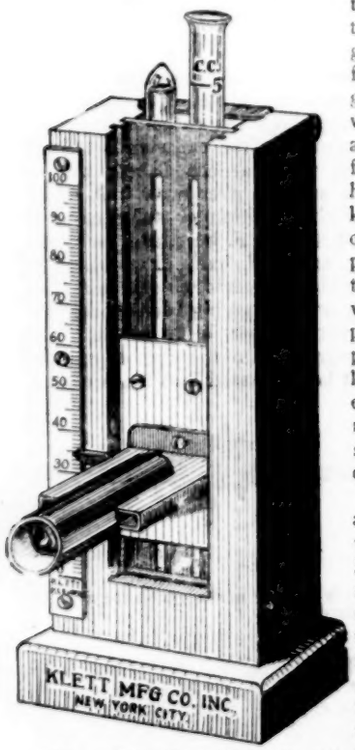

Fig. 1.—The microcolorimeter with wedge and graduated test tube in place, ready for use.

The apparatus required are: a microcolorimeter with sugar standard and 5 c.c. graduated test tubes; a 0.2 c.c. blood pipet; a 2 c.c. Mohr pipet in tenths; two 1 c.c. Mohr pipets in tenths; funnels (from 2.5 to 3 cm. in diameter); thin filter paper[2] (5 cm. in diameter); a centrifuge and tubes (not absolutely essential); a water bath (e. g., a beaker) and stand or tripod, and a Bunsen burner.

The reagents required are: 20 per cent. potassium oxalate solution; Benedict's picrate-picric acid solution,[3] and 20 per cent. sodium carbonate solution.

PROCEDURE

The 0.2 c.c. pipet is washed and then rinsed with 20 per cent. potassium oxalate solution. The residual fluid should now be blown out well; enough oxalate will remain to prevent clotting. The finger or ear lobe is then pricked and 0.2 c.c. of blood drawn up in the pipet and discharged into a centrifuge tube. The pipet is then rinsed twice with exactly 0.2 c.c. of water each time and the washings added to the blood. After a minute or two has been allowed for laking, exactly 1.9 c.c. of picrate-picric acid solution is added and the fluids thoroughly mixed. The tube is now centrifuged and the clear supernatant fluid poured off into a clean, dry test tube. Instead of centrifuging, the mixture may be filtered through a very small thin filter paper; with reasonable care, twice as much filtrate as is necessary may be obtained. With a clean, dry, 1 c.c. Mohr pipet, 0.8 c.c. of the supernatant fluid or filtrate is transferred *to the bottom* of the graduated test tube, *which must be dry.* To this should be added 0.1 c.c. of 20 per cent. sodium carbonate solution, and the tube should be well shaken and placed in a boiling water bath for ten minutes. It is now cooled under running water and diluted to either the 1.5 c.c. or 3 c.c. mark (or rarely 5 c.c.), depending on whether it is a light or deep orange color. It is now shaken again, placed in the colorimeter and matched to the standard "sugar" wedge. The reading is now made on the scale and the percentage of sugar found directly by consulting the proper table (1.5, 3 or 5 c.c.). If there is any doubt as to which dilution to use, the 1.5 c.c. should be tried first; if this proves darker than the highest point on the scale, one should dilute to the 3 c.c. mark, mix and compare. As this dilution permits of readings up to 0.37 per cent., the highest dilution (5 c.c.) will seldom be required.

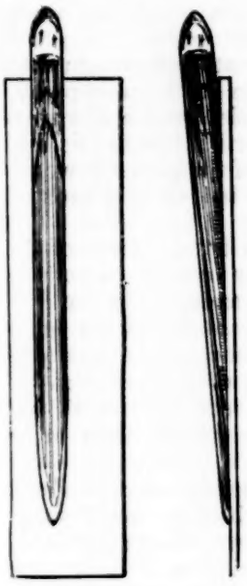

Fig. 2.—The wedge containing the standard color: *a*, front view; *b*, side view.

TABLE 1.—BLOOD SUGAR, DILUTION TO 1.5 C.C.

Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.
20	0.06	30	0.09	40	0.11	50	0.13	60	0.15	70	0.16
21	0.07	31	0.10	41	0.11	51	0.13	61	0.15	71	0.16
22	0.07	32	0.10	42	0.12	52	0.13	62	0.15	72	0.17
23	0.07	33	0.10	43	0.12	53	0.13	63	0.15	73	0.17
24	0.08	34	0.10	44	0.12	54	0.14	64	0.15	74	0.17
25	0.08	35	0.10	45	0.12	55	0.14	65	0.15	75	0.17
26	0.08	36	0.11	46	0.12	56	0.14	66	0.16	76	0.17
27	0.09	37	0.11	47	0.12	57	0.14	67	0.16	77	0.17
28	0.09	38	0.11	48	0.13	58	0.14	68	0.16	78	0.18
29	0.09	39	0.11	49	0.13	59	0.14	69	0.16	79	0.18

TABLE 2.—BLOOD SUGAR, DILUTION TO 3 C.C.

Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.
20	0.14	30	0.21	40	0.25	50	0.28	60	0.31	70	0.34
21	0.15	31	0.22	41	0.26	51	0.29	61	0.32	71	0.34
22	0.16	32	0.22	42	0.26	52	0.29	62	0.32	72	0.35
23	0.17	33	0.23	43	0.26	53	0.29	63	0.32	73	0.35
24	0.18	34	0.23	44	0.27	54	0.30	64	0.32	74	0.35
25	0.18	35	0.23	45	0.27	55	0.30	65	0.33	75	0.36
26	0.19	36	0.24	46	0.27	56	0.30	66	0.33	76	0.36
27	0.19	37	0.24	47	0.28	57	0.30	67	0.33	77	0.36
28	0.20	38	0.25	48	0.28	58	0.31	68	0.34	78	0.36
29	0.21	39	0.25	49	0.28	59	0.31	69	0.34	79	0.37

The pipet to be used for measuring 0.8 c.c. of the filtrate should either be dry or be rinsed with 0.1 or 0.2 c.c. of the fluid. There is usually enough to permit this to be done.

* From the Department of Physiological Chemistry of the New York Homeopathic Medical College and Flower Hospital.

1. Benedict, S. R.: A Modification of the Lewis-Benedict Method for the Determination of Sugar in the Blood, J. Biol. Chem. **34**: 203 (April) 1918.

2. The "Whatman No. 1" (5 cm. in diameter) has been found to be serviceable.

3. Benedict's picrate-picric acid solution is thus prepared: To 500 c.c. of 1 per cent. sodium hydroxid solution are added 36 gm. of purified picric acid and 400 c.c. of hot water. The mixture is shaken until the picric acid is dissolved. After cooling it is diluted to 1,000 c.c.

Neither this pipet nor any other apparatus used should be dried with alcohol and ether, as the minutest traces of certain organic impurities contained in them will give marked

TABLE 3.—BLOOD SUGAR. DILUTION TO 5 C.C.

Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.	Reading	Per Cent.
20	0.24	30	0.38	40	0.45	50	0.50	60	0.53
21	0.26	31	0.39	41	0.45	51	0.50	61	0.53
22	0.28	32	0.40	42	0.46	52	0.50	62	0.53
23	0.30	33	0.40	43	0.46	53	0.51	63	0.54
24	0.32	34	0.41	44	0.47	54	0.51	64	0.54
25	0.33	35	0.42	45	0.47	55	0.51	65	0.54
26	0.34	36	0.42	46	0.48	56	0.52	66	0.54
27	0.35	37	0.43	47	0.48	57	0.52	67	0.55
28	0.36	38	0.44	48	0.49	58	0.52	68	0.55
29	0.37	39	0.44	49	0.49	59	0.52	69	0.55

color reactions with picric acid and sodium carbonate, and the results will be correspondingly high. The standard test tube likewise should be dry, or at least the water should be well shaken out.

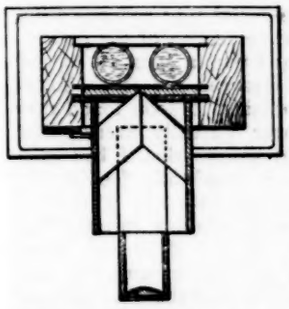

Fig. 3.—Cross section of instrument.

The wedge is filled with 2.5 per cent. potassium dichromate solution and is, of course, relatively permanent.

I prepared the tables from curves plotted from the results of a large number of determinations carried out with solutions containing known percentages of glucose.

Results obtained with this method have agreed very closely with the figures obtained by simultaneous analyses in which the ordinary methods, requiring 2 c.c. of blood, were employed. As this method is simple, quick and accurate, and requires only 0.2 c.c. of blood, it is evident that it should prove valuable to the clinician.

I hope to investigate further uses for the microcolorimeter described above.

A SIMPLIFIED METHOD OF PREPARING SOLUTIONS OF NEO-ARSPHENAMIN

JAY FRANK SCHAMBERG, M.D., PHILADELPHIA

The use of neo-arsphenamin has become so widespread in Europe and in the United States that it is now employed at least five times more frequently than arsphenamin. From the public health standpoint it is obviously desirable that every practitioner in the country should be able to administer this important drug. Any procedure tending toward a simplification of the technic of preparation operates in the direction of rendering its use more facile by country practitioners who are not possessed of laboratory facilities. It is possible to prepare a solution of neo-arsphenamin for use without any other apparatus save a sterile glass syringe and needle, and 5 c.c. of sterile distilled water. The glass ampule itself may be used to dissolve the contained powder.

TECHNIC[1]

1. The ampule is shaken or knocked so that the powder flows easily and is not lumped.

2. The tip of the ampule is filed off, as illustrated in Figure 1. The opening should be large enough to permit the introduction of the needle to be used.

3. With the ampule almost in a horizontal position, 5 c.c. of sterile distilled water is introduced by means of the syringe (Fig. 2).

4. The ampule is then agitated for from thirty seconds to a minute, when the powder should be in complete solution. To avoid spilling the solution, the finger, covered with a rubber glove or rubber finger stall, should be held over the tip of the ampule.

5. The solution is then drawn up into the syringe (Fig. 3) and is ready for injection.

COMMENT

The advantage of this method is that it dispenses with the use of a mixing cylinder and renders oxidation less liable, since only a little air remains in the ampule. It likewise decreases the chances of getting glass into the solution in the syringe.

Fig. 1.—Filing tip of ampule.

The ampule will readily receive 5 c.c. of water; if one desires to use more water for the injection, 5 c.c. of solution or as much as is desired can be placed in the syringe before sucking up the solution from the ampule.

I am not sure that all makes of neo-arsphenamin can be easily dissolved in 5 c.c. of water, but there are available brands that can be. For physicians in the country who cannot secure sterile distilled water, laboratories could supply a

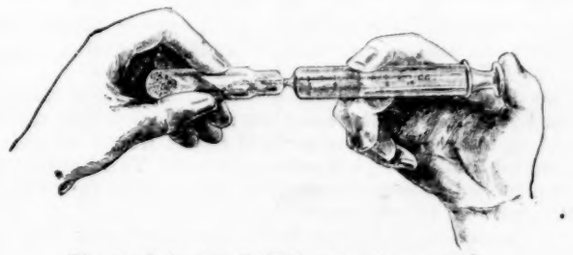

Fig. 2.—Injecting distilled water into ampule.

sealed container, holding 5 c.c. of water, to accompany the ampules. As regards the degree of concentration of neo-arsphenamin mentioned, I am satisfied, from a large experience, that there is no greater liability to reactions than when a larger quantity of water is used.

To be sure, when concentrated solutions of neo-arsphenamin are employed, any extravasation outside the vein will cause a correspondingly greater tissue reaction than when more dilute

Fig. 3.—Drawing solution of neo-arsphenamin into syringe.

solutions are used. Great care must therefore be exercised to make certain that the needle is in the vein. Pain, tumefaction or resistance to flow suggests that the solution is not going into the vein. When one is in doubt, the tourniquet should be again applied and traction made on the piston; if blood freely enters the syringe, then the needle is in the vein. The injection should not be given with too great speed, as immediate reactions are more likely to be induced than when the fluid is

1. Since this was written, the author's attention has been directed to an almost identical technic described by Fordyce and Rosen (J. A. M. A. 75: 1385 [Nov. 20] 1920) for the preparation of neo-arsphenamin for intramuscular use.

infused more slowly. At least from one to one and one-half minutes should be consumed to inject 5 c.c. of solution.

It is hardly necessary to state that a solution should never be used unless it is *brilliantly clear.*

1922 Spruce Street.

A PRACTICAL BANDAGE FOR THE THORAX

CONSTANTINE L. A. ODÉN, B.S., M.S., M.D., NEW YORK

A bandage that will stay in place and still be comfortable when applied to the thorax is especially desirable in surgical conditions of the chest, breast, back and allied areas. The one described herein has been demonstrated to possess all of

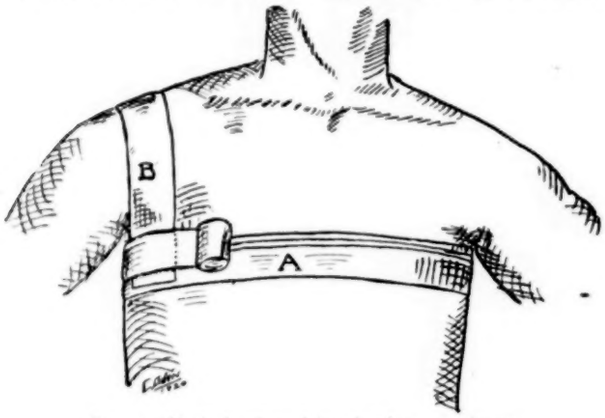

Fig. 1.—Method of applying bandage to thorax.

these qualities. After searching the literature at my command, and finding no similar bandage for this region described, I venture to present it.

Two 3-inch gauze bandages are used. With one bandage (Fig. 1 *A*), three circular turns are made horizontally around the chest to a point at the pectoral region where the end of the second bandage, *B*, is caught in its fold. This bandage, *B*, is then carried up over the shoulder and down to the scapular region, where it is again caught by a circular turn of *A*. This process is continued until the desired area is covered (Fig. 2).

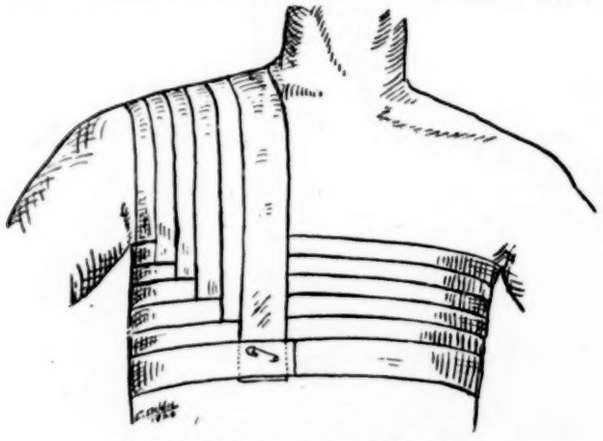

Fig. 2.—Bandage covering desired area.

In case it is desired to cover both scapulopectoral areas, a third bandage can be applied simultaneously like *B* on the opposite shoulder. The folds of these bandages *B* and *C* are caught and held with the same circular turns of *A*. In this manner the entire chest and both shoulders can be covered at one time, a factor often desirable.

This bandage has a distinct advantage over any other used for a similar purpose. It will not work loose, but will stay in place until taken off. As stated, it is especially useful, and fills a long felt want where large areas are to be covered and it is necessary to have a dressing to remain in one place. It has been used with pleasing results as to both permanence and function.

ADVANTAGES OF PROCTOCLYSIS BY THE FLUSH METHOD

B. V. MCCLANAHAN, M.D., GALESBURG, ILL.

During my tour of duty at Christiansted, St. Croix, Virgin Islands of the United States, I had occasion to use rectal fluids in a large majority of my operative cases, and we were constantly troubled by soiled beds, kinked tubing and inability to keep the solution warm.

THE FLUSH METHOD

These reasons, combined with the utter lack of responsibility of the native nurses in managing the rectal drip method, caused the patients a vast amount of discomfort and ourselves a continual annoyance. In a short time I discontinued the use of the drip method entirely, and commenced to use what may be called a flush method of proctoclysis. The apparatus is extremely simple, consisting only of an irrigating can and a rectal tube with the end cut off. The can rests on a small table at the bedside at about the level of the patient's rectum. The rectal tube extends from the can, under the bedclothes, into the rectum of the patient. No regulation of flow is needed, and thus a constant to and fro communication is maintained between the large bowel and the container of fluid at the bedside. I soon found that this apparatus had advantages over virtually every other method of administration of rectal salines that I had ever used or had seen used: (1) It was practically fool proof; (2) it gave greater comfort to the patient; (3) it allowed passage of feces, gas and returned solution through the rectal tube instead of around it. I say it is fool proof because we were able to instruct the native nurses in the first few weeks of their training to manage this method successfully, and they were able to use it with uniform success though they had utterly failed in their efforts with the drip method.

The comfort to the patient is twofold: He does not complain of a sense of pressure in the rectum, for as soon as the rectum is at all distended with fluid its muscles may contract involuntarily and force the fluid, which is not under pressure, back into the can. His bedclothes are not continually soiled, as the fluids which he does not absorb, and cannot care for, are not forced out around the tube on his bedding, but are forced back into the irrigating can. The passage of gas and feces is accomplished whenever necessary and without any control of the sphincter muscles whatever.

COMPARISON OF METHODS

In comparing this method with the old drip method that I had been using formerly, I find that it has all the advantages of the drip method with virtually none of its disadvantages. It is impossible to force the mucosa of the rectum to absorb more fluids by having those fluids under pressure, and I dare say if the average drip method in operation is examined there will be found to be at least a head of 1½ to 2 feet of water pressure in the tube leading to the rectum. Rectal mucosa needs only contact with physiologic sodium chlorid solution or tap water for absorption. The tension which is caused by the head of pressure in the tube of the average drip method apparatus is a detriment rather than an advantage to absorption.

I find it much easier to keep the fluid in the flush method apparatus of an even temperature than I did in the drip method apparatus used, for the simple reason that the tube is larger and shorter in the flush method and is virtually all under the bedclothing and therefore at about body temperature. It is a simpler matter, also, to renew the fluid in the can of a flush method apparatus than it is in the drip method apparatus.

In the flush method apparatus, almost the full length of the tube is under the bedclothing, for the can rests on a small table at the bedside, the height of the can being regulated in accordance with the height of the fluid, care being taken at all times that the top of the level of the fluid in the can is not more than 4 inches above the level of the rectum of the patient. In this way it will be seen that there

never can be more than a head of 4 inches of pressure on the fluid in the rectum.

If at any time an enema or low flushing is desired, the raising of the can forces more solution into the rectum. Either the can may be lowered again, allowing the fluid with any dislodged feces to return into it, or the patient can be placed on a bedpan, the tube removed, and the patient allowed to empty the rectum himself.

CONCLUSIONS

To summarize the situation we must take into consideration these facts:

1. Fluids, and especially salines, are of great importance in the body.

2. Fluids can be given by rectum over a longer period of time and with less discomfort to the patient than in probably any other way except their administration by mouth.

3. In a great many conditions, principally abdominal and those in which fluids can be administered successfully by rectum, it is not advisable to administer these fluids by mouth.

4. Fluids, whether tap water or physiologic sodium chlorid, glucose or alkaline solution, can be administered just as efficiently and a great deal more satisfactorily by this method than by the commonly used drip method that has been in vogue for so many years.

5. Almost any one, either in a home or in a hospital, will be able to use this method effectively. It gives the patient no discomfort; the rectal tube is larger than the catheter, but there is no sphincter action brought into play at any time; the patient's bed is seldom, if ever, soiled by fluids passing out around the tube, and the passage of gas and feces is accomplished involuntarily through this tube. I have used the method as long as three weeks continuously in a given case, and never once was the bed soiled or did the patient complain of any discomfort.

249 East Main Street.

A SIMPLE APPARATUS FOR THE ALKALIZATION OF SOLUTIONS OF ARSPHENAMIN *

J. E. LANE, M.D., NEW HAVEN, CONN.

The use of a standardized solution of sodium hydroxid in the preparation of arsphenamin solutions presents some advantages over the methods at present generally employed. The content of sodium hydroxid being accurately measured, the exact amount of the solution necessary for neutralization or for the desired degree of alkalization may be added at once—a procedure that facilitates solution of the precipitate.

This method has long been used by many of the French syphilologists. A few of those in this country have used it, and recently some of the manufacturers of arsphenamin have recommended it. I have found the method very satisfactory, but for some time have felt the need of a simple measuring apparatus more convenient than the ordinary graduated pipet, which is rather awkward to use when a number of solutions are to be prepared. The automatic burets on the market are too cumbersome and complicated to be commonly adaptable for this purpose. The apparatus here described appears to fulfil the requirements of simplicity, inexpensiveness and sufficient accuracy to make it generally useful.

The Herbert E. Smith easy-filling buret is used.[1] Its construction is easily seen in Figure 1. The inner tube, *A*, is continuous with the tube *B*, which goes into the bottle containing the solution. The outer tube, *C*, is closed at the bottom, and its outlet, through the tube *D*, to which a glass tip is attached by a piece of rubber tubing, is controlled by a pinchcock. At the top of the tube *C* is attached a rubber bulb in which a small opening has been made. To fill the tube the bulb is compressed, the hole is then covered with the finger, and the bulb is allowed to expend. This draws the fluid through the inner tube *A-B*, filling the outer tube *C*. When the finger is removed from the opening in the bulb, any excess of the solution runs back into the bottle through the tube *A-B*, leaving the outer tube filled to the point *O*, at which point the graduations begin.

The adaptation of this buret to the present purpose is seen in Figure 2. A calcium chlorid tube, filled with soda lime between two layers of cotton, is fitted to a second hole in the rubber stopper of the container, and another is attached by means of a perforated rubber stopper between the top of the buret and the bulb. This effectually prevents the deterioration of the solution by the entrance of carbon dioxid and moisture, dust and bacteria.

The inside of the bottle containing the solution is coated with paraffin of a high melting point, which prevents the solution from being affected by the glass and permits it to be kept without change for some time. Part of the action of the solution on the glass of the buret may be prevented by coating the tube *B*, which stands in the solution, inside and out with paraffin, and by emptying the outer tube after using. If these precautions do not appear sufficient, the action on the glass may be entirely prevented by removing the apparatus, with the stopper, emptying the outer tube, flushing the buret by drawing sterile water through it, replacing it, and allowing it to stand empty till again needed.

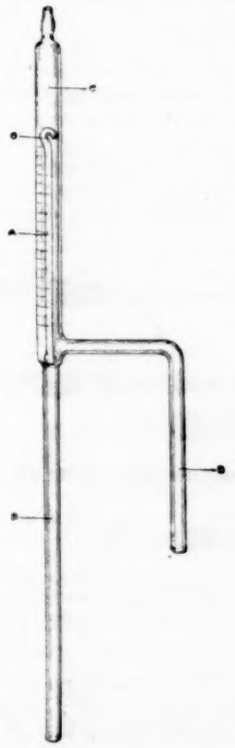

Fig. 1.—Construction of buret.

Fig. 2.—Modified measuring apparatus.

A buret of 10 or 20 c.c. capacity is a convenient size for ordinary use.

59 College Street.

Preventive Medicine a State Function.—Certain forms of medical activity cannot be undertaken individually by the medical practitioner. The problem of the prevention of disease can only be solved by the coordinated work of many agencies. For this purpose the proper authority to bear the responsiblity is the constituted health authority under the control of the government. Success depends on the degree of compulsion that can be exercised, and it is admitted that legal compulsion alone suffices for the purpose of preventive medicine.—*Med. J. Australia*, July 3, 1920.

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* From the Department of Dermatology, Yale University School of Medicine.

1. For the design of the buret I am indebted to my former teacher, Dr. Herbert E. Smith of Los Gatos, Calif. Many years ago, when he was dean and professor of chemistry in Yale University School of Medicine, he showed me this buret, which he designed for his own use. It has never been on the market, but has recently been reproduced for me by Eimer and Amend of New York.

AN IMPROVED URETHRAL INSTILLATING SYRINGE

NEIL MOORE, M.D., ST. LOUIS

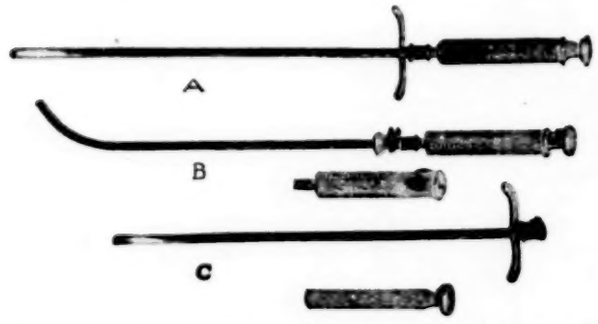
Priority for such an instrument as the one here described is not claimed, though the idea is entirely original with me. Since the completion, however, of this syringe by Mr. W. A. Phillips, an expert medical instrument mechanic, another similar in many respects has been observed in a dealer's show-case, apparently the result of a mechanic's experiment with no particular idea in view.

ESSENTIALS OF ASEPTIC CATHETERIZATION

Keyes[1] says: "The asepsis of catheterism, using the term broadly to cover every passage of an instrument into the urethra, implies three requirements, viz.: (1) asepsis of the physician's hands; (2) antisepsis of the patient's urethra; (3) asepsis of the instrument introduced." With this I fully agree, and it was such an idea that stimulated the perfection of the instrument in question.

Keyes presents an illustration of his instillating syringe. It contains a leather washer-piston fitted into a glass tube, which lies within a metal barrel and has screw connections with leather washers. None of these will withstand heat in any form sufficient to sterilize as often as a busy urologist must use such a syringe without irreparable damage, necessitating frequent replacement of parts.

A syringe that fulfils the sterilizing requirements without injury to its parts, so well as the one to be described, has not come under my observation, though it is not denied that



Improved urethral instillating syringe: *A*, anterior view; *B*, lateral view, showing pointer in center of guard directed toward distal point of cannula; *C*, syringe disconnected, as it should be when placed in sterilizer.

such a one has been perfected. The all metal syringe with slip-on connection certainly comes nearest to it; but it has the disadvantage of not working smoothly when hot, of being very heavy, and of rusting easily.

DESCRIPTION OF INSTRUMENT

My syringe consists of a small silver cannula similar in size and shape to the one used on the Keyes-Ultzman syringe. To the proximal end of this is welded a slip-on connector which can easily be detached from any old, wornout Luer needle of 19 or 20 gage. At the junction between the connection and the cannula is inserted a metal cross guard with a pointer in the center which always points toward the concavity of the curved cannula. This makes it easy to know the direction in which the intra-urethral end is pointing. The remainder is a simple 1.5 c.c. Luer glass syringe which will fit the slip-on connection on the end of the cannula.

The advantages are: 1. The instrument can be boiled indefinitely or sterilized under pressure with other instruments without injury. 2. It is comparatively light in weight and is simple to manipulate. 3. The original cost is about a dollar less than other instruments with similar uses. The glass barrel and piston may be used for other purposes. 4. It never fails to work; there is nothing to get out of repair. The disadvantages are virtually nothing if reasonable care is exercised to prevent breaking the glass parts.

550 Century Building.

1. Keyes: Urology, 1919, p. 26.

Special Articles

BIOLOGIC THERAPY *

(Continued from page 113)

IX. ACNE VACCINE THERAPY

MARTIN F. ENGMAN, M.D.
ST. LOUIS

Although there are various controversial opinions as to the value of acne bacillus suspensions in the treatment of acne vulgaris, we are justified in saying that in certain types of this disease vaccines are of considerable value and act with specific effect. It must be admitted that *B. acnes* is the specific causative organism of the disease known as acne vulgaris, or "polymorphic acne" of Sabouraud. The histologic and bacteriologic study of the lesions of this disease demonstrates its causative relationship.

The specific effect of the acne bacillus suspensions (vaccines) are best seen in the types of acne vulgaris known as acne indurata, and certain forms of cystic acne in which the lesions lie deeper in the cutis. These vaccines have less effect on the more superficial types known as acne simplex and acne pustulosa, owing probably to the protection offered to the organisms by the walls of the follicles, as in these types they lie more superficially and are less accessible to immune bodies.

Acne vaccines should be used in the types just mentioned. In my opinion, failure to obtain proper therapeutic results in the use of this method has been due to the administration of too large doses or to too frequent administration of the vaccine.

The acne bacillus is a difficult organism to cultivate on artificial mediums; autogenous vaccines, therefore, are almost prohibitive for common use in most instances on account of the time lost in making the preparation. Stock vaccines, properly checked and controlled, have been just as efficient.

The initial dose should be from 3 to 5 million, to be repeated in from five to seven days. The interval should be gaged according to the reaction to the dose, which is usually exhibited by the appearance of a few new lesions within forty-eight hours after the injection. On the third day after the injection, comedones may be expressed and the lesions opened if necessary. The manipulation of the lesions at this time helps bring the immunizing blood to the part and it is at the height of the "tidal wave of immunity." Local hyperemia in the form of hot towels or that resultant from manipulation should be used on the third day after each injection and not before then.

If, after a few such doses, new lesions continue to appear after the third day, a larger dose of from 7 to 10 million should be given and continued until a proper therapeutic result is obtained, when the interval of administration should be lengthened to two weeks, then three weeks, and finally four weeks, thus continuing the remedy in a prophylactic manner.

If there is an outcrop of many new lesions within forty-eight hours after injection, the dose should be lessened and the interval of dosage extended. However, if many new lesions appear after the third day, it

* This is the third instalment of a series of articles dealing with serums, vaccines and nonspecific therapy.

is an indication for a much larger dose. In no instance should more than 15 million be administered in any injection.

The staphylococcus vaccine in acne vulgaris is of little if any value. The same thing may be also said of the staphylococcus part of mixed acne bacillus and staphylococcus vaccines. Acne varioliformis, which occurs later in life than acne vulgaris and is of staphylococcus genesis, is markedly influenced by vaccines of *Staphylococcus albus* when given in suspensions of from 50,000 to 100,000 every five to seven days. Therapeutic effects in the deeper forms of acne vulgaris with properly prepared stock vaccines are, in some instances, remarkedly beneficial.

In the treatment of many hundreds of cases of acne vulgaris by this method, I have seen no untoward effects from treatment with the exception of a slight local reaction at the point of subcutaneous injection.

Wall Building.

X. VACCINATION AGAINST TYPHOID AND PARATYPHOID FEVERS *

F. F. RUSSELL, M.D.
AND
H. J. NICHOLS, M.D.
WASHINGTON, D. C.

The value of antityphoid vaccination has been repeatedly demonstrated, and there is no question of its power to prevent infection. The protection is not absolute; some cases occur among the vaccinated, but their number is small. The results in the army are fully as good as if not better than those obtained against smallpox with vaccinia.

Antityphoid vaccine, as usually administered, is a suspension in physiologic sodium chlorid solution of killed typhoid bacilli, together with their soluble products from young agar cultures. A thick suspension is first made and is then standardized so that 1 c.c. contains 1,000 million bacteria.

The paratyphoid bacilli A and B are treated similarly to produce the paratyphoid vaccine. At present a triple typhoid vaccine is used which contains 1,000 million typhoid bacilli and 750 millions of each of the two paratyphoids in each cubic centimeter.

Sensitized living vaccines or serovaccines have been advocated by Besredka and others, but since they all contain living bacteria capable of multiplication under suitable conditions outside the body, there is some danger from their general use; experience has shown that ample protection may be obtained from killed bacteria, which are entirely safe.

Lipovaccines have recently been advocated by Le Moignic, Whitmore and others because of the simplicity of the single dose; this would be a great advantage if the amount of protection conferred were equal to that given by the saline vaccine; but as gaged by the presence of agglutinins, the response is greatly inferior.

The vaccine is regularly given in three doses, a week to ten days apart; no harm arises from longer or shorter intervals, but they are less convenient and the resulting immunity may not be so high. The best time of day for administration is about 4 in the afternoon, because if a general reaction supervenes, the greater part of it will be over before the next morning.

The best site for the vaccination is the upper arm at the insertion of the deltoid, where the subcutaneous tissue is loose. The vaccine must always be administered subcutaneously, and never into the skin or into the muscles or veins. In the latter localities, absorption is rapid and the general reaction may be severe.

A local reaction is almost invariably present, usually consisting of a red and swollen area, the size of the palm of the hand. The redness and swelling may extend to the wrist or upward to the clavicle; the axillary lymph nodes may be swollen. Nothing more than symptomic treatment is necessary, as the aseptic inflammation subsides within a day or two. Occasionally, induration or fluctuation may be detected, but no incision or drainage is necessary. The general reaction may be absent or mild or severe. It consists of headache, malaise, a rise of temperature, in severe cases to 104 or 105 for a short time, accompanied by nausea, vomiting and perhaps diarrhea and temporary albuminuria. These reactions ordinarily subside in a few days, and leave no sequelae.

A week after the first dose, agglutinins and other antibodies begin to appear in the blood, and increase to a maximum about three weeks after the third dose, after which time they gradually diminish. The immunity, however, does not disappear at the same time, but continues to be present, no doubt in a diminishing degree for years. After typhoid fever itself, which gives immunity for life, the antibodies in the blood are no longer detectable after about six months.

The duration of the immunity is difficult to establish, but it seems to be a matter of years rather than months. Much depends on the amount of exposure. For soldiers, who must have the maximum immunity obtainable, since in campaign they may have no other protection, revaccination should be carried out on the appearance of any typhoid fever among them. The same rule should apply to campers, contractors' gangs, lumbermen, civil engineers' forces,and the like. Revaccination among nurses, attendants and physicians constantly exposed to infection should be carried out annually. Children, 2 years old or more, bear the vaccination better than adults, and should be revaccinated at two to three year intervals, the best time being just before going to the country on their summer vacation.

INDICATIONS FOR VACCINATION

Typhoid fever is still a common disease, particularly among young persons, and the possibilities of infection from water, milk and from temporary and permanent bacillus carriers are always present. The chances of infection are greater in the country districts than in the larger cities, and in backward than in highly civilized countries. Travelers are more exposed than natives, even in the same locality. In addition, the indications point to the wisdom of vaccinating all contacts of typhoid fever cases, in the same way that smallpox contacts are vaccinated.

CONTRAINDICATIONS

Since the basis of any vaccination is to obtain protection against a possible danger, the vaccination is contraindicated when the danger from the vaccine itself is as great as the danger from the fever. Mortality tables indicate that the danger of infection is everywhere present, although the chances are much greater in some localities than in others. The danger from the vaccine itself is greatest in the case of applicants suffering from chronic disease of the kidneys. No one suffering from acute illness should be vaccinated until his temperature has returned to normal

* From the Army Medical School.

and convalescence is well established. In the presence of an epidemic, tuberculosis of the lungs, either latent or active is not a contraindication. Neither typhoid fever nor vaccination seems to have any harmful effect on the progress of the tuberculosis.

XI. PNEUMOCOCCUS VACCINE

RUSSELL L. CECIL, M.D.
NEW YORK

Pneumococcus vaccine is a suspension of killed pneumococci in broth or salt solution. When the suspension is composed of a single strain of pneumococcus, the vaccine is "monovalent"; when the vaccine consists of several different strains, or types, of pneumoccocus, it is "polyvalent." Autogenous pneumococcus vaccine is usually monovalent; most of the stock pneumococcus vaccines on the market are polyvalent.

METHOD OF PREPARATION

Pneumococci are cultivated from eighteen to twenty-four hours on plain or glucose broth. The culture after killing may be used directly or it may be centrifuged, and the sediment of bacteria be suspended in physiologic sodium chlorid solution. Finally it is heated at 55 C. for one-half hour to kill the pneumococci, and the vaccine standardized by the Wright method or by means of a nephelometer. Cultures are taken to test the sterility of the vaccine, and tricresol is added to a concentration of 0.3 per cent. as a preservative.

Pneumococcus lipovaccine is a modified vaccine, very similar to the saline, except that the bacteria are suspended in some vegetable oil instead of salt solution. It possibly is more slowly absorbed than the saline vaccine, and the reactions are not so sharp. Its antigenic value, however, has been questioned, and it is not being manufactured at present by the army, nor has a government license been issued for interstate sale.

METHOD OF ADMINISTRATION

Pneumococcus vaccine is almost always administered subcutaneously. The proper method of giving the vaccine is to pinch up the skin, and insert the needle well under the dermis. Intracutaneous injections may excite severe local reactions.

Pneumococcus vaccine, if injected intravenously, induces a sharp constitutional reaction (chill, fever, leukocytosis, etc.) similar to that following the intravenous injection of typhoid vaccine. This is the so-called "nonspecific protein reaction," which follows the intravenous injection of any foreign protein, and is occasionally employed in the treatment of certain forms of arthritis. Under ordinary circumstances, however, the intravenous injection of pneumococcus vaccine is strongly contraindicated.

DOSAGE

For therapeutic purposes, pneumococcus vaccine is administered in doses varying from 10 to 1,000 million pneumococci, or even more. For prophylaxis, much larger doses are used. In the U. S. Army from 3 to 9 billion was the dose of saline vaccine; from 30 to 40 billion of the lipovaccine. In the case of saline vaccine, three injections were given at seven day intervals, the first dose 3 billion, the second, 6 billion and the third, 9 billion. The lipovaccine was administered in one dose.

REACTIONS

Both the local and the general reaction vary greatly in different individuals. The smaller the dose, the milder the reaction. It is therefore desirable to divide the total dosage into as many inoculations as circumstances make practicable. It should always be remembered, however, that up to a certain point, the larger the total dose, the higher will be the immunity conferred.

In general it may be said that reactions to pneumococcus vaccine are similar to those following injections of typhoid vaccine. Within twenty-four hours following the injection an area of redness and induration appears at the site of the inoculation, which is usually 2 or 3 cm. in diameter, but may be larger. Occasionally small sterile infiltrations, which disappear spontaneously, follow the injection of large doses. Such reactions appear to be an expression of cutaneous hypersusceptibility.

The constitutional reaction to pneumococcus vaccine is usually insignificant. In many cases it is entirely absent. In a small percentage of cases, vaccination is followed by headache or backache, general malaise, chilly sensations and rise in temperature. These symptoms, however, are of short duration.

INDICATIONS FOR USE

Prophylactic vaccination against pneumonia is indicated whenever large groups of individuals are living together under abnormal conditions. Pneumococcus vaccine has been used with succcess among the mine workers of South Africa and more recently in the United States.

During the late war, pneumococcus vaccine was used extensively in some of the American army training camps as a prophylactic against lobar pneumonia. At Camp Upton, New York, Cecil and Austin [1] vaccinated 12,519 men against pneumococcus Types I, II and III. Three or four doses of saline vaccine were given at intervals of five to seven days with a total dosage of 6 to 9 billion of Types I and II, and 4 to 6 billion of Type III. The men were under observation ten weeks after vaccination, and during that time, no cases of pneumonia of the three types vaccinated against occurred among the men who had received one or more injections of vaccine. In a control of approximately 20,000 men, there were twenty-six cases of pneumonia, Types I, II and III, during the same period. Altogether, there were seventeen pneumonias of all types among the vaccinated 40 per cent. of the camp, and 173 pneumonias of all types among the unvaccinated 60 per cent. of the camp.

Following the Camp Upton experiment, Cecil and Vaughan [2] undertook to vaccinate the troops at Camp Wheeler, Ga., against lobar pneumonia, using, in this instance, pneumococcus lipovaccine in place of the saline vaccine which had been employed at Camp Upton. The dosage employed in all cases was 1 c.c. of lipovaccine containing approximately 10 billion each of pneumococcus Types I, II and III. Of the entire camp strength, 13,460 men, or about 80 per cent., were vaccinated. The men were under observation from two to three months following vaccination. During this period, there were thirty-two cases of pneumococcus Types I, II and III pneumonia among the vaccinated four fifths of the camp, and forty-two

1. Cecil, R. L., and Austin, J. H.: J. Exper. Med. **28**: 19 (July) 1918.
2. Cecil, R. L., and Vaughan, H. F.: J. Exper. Med. **29**: 457 (May) 1919.

cases of pneumonia of these types among the unvaccinated one fifth of the camp. The weekly incidence rate for pneumonia of all types among the vaccinated troops was conspicuously lower than that for the unvaccinated troops. It will be seen from these figures, however, that the results of pneumococcus vaccination at Camp Wheeler were not so striking as those obtained at Camp Upton the previous winter. This difference was probably due to several factors, among which might be mentioned the influenza epidemic, which swept over the camp before vaccination against pneumonia had been completed, and the use of a lipovaccine instead of a saline vaccine. Since this experiment was carried out, it had been shown by Lewis and Dodge [3] that typhoid lipovaccine has less antigenic power than typhoid saline vaccine.

Cecil and Blake [4] have tested the value of pneumococcus vaccine as a prophylactic against experimental lobar pneumonia in monkeys. They found that small subcutaneous doses of vaccine were not sufficient to protect monkeys against a subsequent pneumonia, though they did modify favorably the course of the disease. More recently, Cecil and Steffen [5] have found that when large subcutaneous or small intravenous doses of pneumococcus vaccine are used, the immunity against experimental pneumonia in monkeys is complete. Reports of the latter experiments have not yet been published.

Industrial workers who are exposed to the cold and wet, also firemen and policemen, might be vaccinated against pneumonia with advantage. Certain persons are susceptible to pneumonia and suffer from repeated attacks of the disease. It is probable that a polyvalent pneumococcus vaccine might prevent further attacks of the disease.

THERAPEUTIC USE OF PNEUMOCOCCUS VACCINE

Pneumococcus vaccine has been recommended by some investigators in the treatment of lobar pneumonia. There is very little experimental evidence, however, in favor of such vaccination. Rosenow and Hektoen,[6] and more recently Rosenow,[7] have advocated the use of partially autolyzed pneumococci in the treatment of pneumonia. The antigen is prepared by growing virulent strains of pneumococci of the different types in glucose broth from eighteen to twenty-four hours, centrifugalizing, and suspending the sediment in salt solution so that 1 c.c. contains about 15 billion pneumococci. The suspension is shaken with ether and then incubated at 37 C. until autolysis has occurred, that is, until 95 per cent. of the organisms have become gram negative, and 5 c.c. of the suspension produce few or no toxic symptoms in guinea-pigs. The dose of this vaccine for adults is 1 c.c. administered subcutaneously every day until the temperature reaches normal.

In a disease of so varied and uncertain a clinical course as lobar pneumonia it is a matter of great difficulty to be certain that a favorable or unfavorable outcome in a given case is the result of the giving or withholding of vaccine or other proposed remedial agent, and not to the many factors which may possibly determine the question of death or recovery.

It is therefore believed that the greatest caution should be observed in recommending the treatment of pneumonia by vaccines of whatever modification, until the results are confirmed by large and well controlled series of cases.

In subacute pneumococcus infections, such as unresolved pneumonia, sinusitis or bronchitis, pneumococcus vaccine may be of therapeutic value.

CONTRAINDICATIONS

Pneumococcus vaccine is contraindicated in acute infections and in chronic pulmonary tuberculosis and nephritis. It should not be administered in large doses to patients with chronic cardiac disease, or to invalids, or to pregnant women after the fifth month.

19 East Sixty-Fifth Street.

(Series to be continued next week)

3. Lewis, P. A., and Dodge, F. W.: J. Exper. Med. 31: 169 (Feb.) 1920.
4. Cecil, R. L., and Blake, F. G.: J. Exper. Med. 31: 519 (May) 1920.
5. Cecil, R. L., and Steffen, G. I.: Unpublished experiments.
6. Rosenow, E. C., and Hektoen, Ludwig: Treatment of Pneumonia with Partially Autolyzed Pneumococci, J. A. M. A. 61: 2203 (Dec. 20) 1913.
7. Rosenow, E. C.: Partially Autolyzed Pneumococci in the Treatment of Lobar Pneumonia, J. A. M. A. 70: 759 (March 16) 1918.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

PNEUMOCOCCUS VACCINE (See New and Nonofficial Remedies, 1920, p. 285).

Beebe Laboratories, Inc., St. Paul, Minn.

Pneumococcus Vaccine No. 14.—Contains Types I, II, III and IV Diplococci pneumoniae, in equal proportions, respectively, suspended in physiological solution of sodium chloride; each Cc. contains 500 million killed bacteria. Marketed in vials of 6 Cc., 10 Cc. and 20 Cc., respectively.

TYPHOID VACCINE (See New and Nonofficial Remedies, 1920, p. 291).

Beebe Laboratories, Inc., St. Paul, Minn.

Typhoid-Paratyphoid Vaccine No. 39.—Marketed in packages of three 1 Cc. vials, each Cc. containing 1,000 million killed typhoid bacilli, 500 million killed paratyphoid A and 500 million killed paratyphoid B bacilli, respectively, suspended in physiological solution of sodium chloride; also marketed in 30 Cc. vials.

COLON BACILLUS VACCINE (See New and Nonofficial Remedies, 1920, p. 282).

Beebe Laboratories, Inc., St. Paul, Minn.

Colon Vaccine (Acne) No. 11.—Marketed in packages of six 1 Cc. vials, each Cc. containing 1,000 million killed colon communis bacteria suspended in physiological solution of sodium chloride; also marketed in packages of one 10 Cc. vial and in packages of one 20 Cc. vial.

MIXED BACTERIAL VACCINES (See New and Nonofficial Remedies, 1920, p. 295).

Beebe Laboratories, Inc., St. Paul, Minn.

Acne Bacterin Mixed No. 10.—Marketed in packages of six 1 Cc. vials, each Cc. containing 500 million killed B. acni vulgaris, 1,000 million killed staphylococci albi and 500 million killed staphylococci aurei, suspended in physiological solution of sodium chloride; also marketed in packages of one 10 Cc. vial and in packages of one 20 Cc. vial.

Adalin (See New and Nonofficial Remedies, 1920, p. 63).

The following dosage form has been accepted:

Adalin Tablets 5 grains.—Each tablet contains Adalin, 5 grains.

Veronal-Sodium (See New and Nonofficial Remedies, 1920, p. 84).

The following dosage form has been accepted:

Veronal-Sodium Tablets, 5 grains.—Each tablet contains Veronal-Sodium, 5 grains.

Novaspirin (See New and Nonofficial Remedies, 1920, p. 248).

The following dosage form has been accepted:

Novaspirin Tablets, 5 grains.—Each tablet contains Novaspirin, 5 grains.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 15, 1921

NICOTIN AND TOBACCO

The passage of the eighteenth federal amendment having duly removed alcohol from its position of prominence as a menace to human welfare, we may confidently expect that the health reformer will soon direct his attention toward other dangers to life and longevity. Tobacco is certain to become a topic of vigorous debate—perhaps it would be more logical to say the object of renewed attack—on the part of those whose ideals contemplate a hygienic millenium. As the foods that we eat are nowadays so frequently paraded before the eyes of the nutrition experts that no item of inferiority, not to say actual detriment, can escape his scrutiny and condemnation, the defenders of the "weed," even though they are legion, can scarcely hope that tobacco will be immune from critical consideration. This is especially true in view of the enormous quantities of tobacco used in manufacturing. Thus, in 1916, the last year for which we happen to have the statistics at hand, the leaf tobacco involved more than six hundred million pounds of the product. In 1917, according to the data of the commissioner of internal revenue, more than nine billion cigars and thirty billion cigarets, not to mention snuff, chewing tobacco and smoking tobacco, were reported tax paid for consumption. Little wonder that there are persons whose thoughts turn in these days to tobacco.

Like alcohol, tobacco has been the subject of most extravagant exaggeration. The extremes of comment range for either substance from terms of blessing, on the one hand, to expressions of unmitigated execration, on the other. One reason for this diversity of opinion is to be found, here as elsewhere in the popularization of scientific problems, in the admixture of admitted fact with undemonstrated claims. The latter are often formulated in accord with the purposes of a propagandist. The result, a combination of a little truth with a lot of fiction, is always likely to provoke controversy. For example, it is demonstrably true that tobacco smoke may include, in addition to the alkaloid nicotin, a variety of other volatile products, as carbon dioxid, carbon monoxid, hydrocyanic acid, hydrogen sulphid, ammonia and pyridin bases, each of which may be designated, under appropriate conditions, as toxic in character. Are we then to condemn tobacco smoking offhand on the basis of the seemingly deadly showing? Certainly not. Concentrated hydrochloric acid is a corrosive poison; yet in the dilution in which it is found in the gastric juice, the same chemical compound is a beneficent factor in human well-being. The fumes of iodin or a few grams of iodid may be severely toxic; yet a few milligrams of iodin may act to avert pathologic consequences to man and beast.[1]

No one will regard tobacco or tobacco smoke as devoid of some sort of physiologic potency. What is the pharmacodynamic factor? Or is there more than one significant active "principle"? There is a prevalent notion, naturally cherished by smokers, that the organic compound nicotin is burned up in the combustion of tobacco so that at most less toxic derivatives remain in the smoke. The elaborate chemical investigations of the hygienist Lehmann[2] of Würzburg leave no doubt that nicotin as such does in fact make its appearance in the tobacco smoke, wherein it is distilled out from the unconsumed residues. Numerous analyses have shown, further, that the smoker's judgment of "mild" and "strong" qualities in cigars is no guide to the relative content or yield of nicotin; nor are so-called "nicotin-free" cigars always precisely what their label proclaims them to be.

Lehmann clearly recognized that where small quantities of potent substances are concerned, as in tobacco smoke, it would be unscientific and unwarranted to deny that chemical compounds other than nicotin may play some part in the physiologic action of tobacco smoke. The Dutch pharmacologist Storm van Leeuwen[3] has accordingly supplied a purely biologic identification of nicotin, using as an index its well known pressor effect on the circulation. Nicotin is virtually the only constituent of tobacco smoke that will raise blood pressure. Van Leeuwen therefore expresses the strong probability that nicotin is the most harmful constituent of tobacco smoke, and that the untoward symptoms that may appear from excessive smoking (apart from the great differences attributable to the varying susceptibility of individuals) depend on the amount of nicotin that finds its way into the smoke. The heart symptoms, in particular, are ascribed to this agency.

Similar conclusions have been reached by Hahn and Langer[4] of Freiburg in Baden, using a different index, namely, the temporary inhibitory effect of nicotin on the peristaltic movements of isolated segments of intestine. The chemical and biologic analyses agree in their

1. Fetal Athyreosis, editorial, J. A. M. A. **69**: 43 (July 7) 1917; Thyroid Hyperplasia and Iodin, ibid. **70**: 848 (March 23) 1918.
2. Lehmann, K. B.: Untersuchungen über das Tabakrauchen, München. med. Wchnschr. **55**: 723, 1908; Chemische und toxicologische Studien über Tabak, Tabakrauch und das Tabakrauchen, Arch. f. Hyg. **68**: 319, 1909.
3. Storm van Leeuwen, W.: Ueber den Nikotingehalt im Rauche schwerer, leichter und "nikotin-freier" Zigarren, Arch. f. exper. Path. u. Pharmakol. **84**: 282, 1919.
4. Hahn, M., and Langer, H.: Tabakrauch und Nikotin nebst einer biologischen Methode zur quantitativen Bestimmung des Nikotins, Ztschr. f. Hyg. u. Infektionskr. **90**: 22 (March) 1920.

incrimination of nicotin in contrast with other alleged constituents of tobacco smoke. This need not mean, however, that the possible harm that may be encountered in the chronic forms of tobacco abuse are attributable solely to nicotin. Experiments in the development of tolerance for this alkaloid have demonstrated that the sensitivity to nicotin may be somewhat decreased by continued use. Perhaps other components may then exhibit an ordinarily unsuspected effect. In general, without discussing the hygienic, the social or the economic proprieties of the use of tobacco in any form, it seems justifiable to identify the physiologic action of tobacco smoke in largest measure with that of its constituent nicotin.

CONGENITAL STEATORRHEA

Under ordinary circumstances in healthy adults the utilization of all the common dietary fats is so excellent, so far as one may judge from the degree of absorption from the alimentary tract, that any deviation from this advantageous condition at once attracts the attention of a clinician. Accordingly, the appearance of stools richer than normal in fat has long been considered diagnostic of disease. Fatty stools are notably characteristic of cases of obstruction of the bile ducts; but steatorrhea, as the undue excretion of fat in the feces has been designated, may occur even in the absence of jaundice and evidence of biliary disorder. In such instances it has become customary to attribute the failure of fat utilization to pancreatic disease.[1] In true steatorrhea, the presence of fat is recognizable by the eye. Opie's [2] description points out that in some instances the fat is oily or like butter, while in other cases the feces are described as gray, silvery gray, or asbestos-like. The fat, which is liquid when passed, may solidify on cooling and form a layer covering the fecal mass.

Stools rich in fat are encountered in association with other morbid conditions, such as disease of the intestinal walls, lardaceous or ulcerative, and occlusion of the bile duct; but clinical experience does not associate true steatorrhea with such conditions.

There are records of temporary steatorrhea in association with the pancreatitis of mumps. Cases of steatorrhea may continue so as to furnish a prolonged history without indications of any serious detriment to health; nevertheless, virtually all medical writers have inclined to assume a pancreatic defect associated with the condition, particularly because the fat in the stools is often undigested and therefore reappears as neutral fat rather than as free fatty acids. In 1913, however, Garrod and Hurtley [3] described for the first time a case of a young boy in which steatorrhea was congenital and unattended by any signs of illness. From infancy he had experienced the passage, from the bowel, of liquid fat which solidified on cooling. Neither bile preparations nor pancreatic gland extracts brought about any improvement in the utilization of fats, although some of them increased the cleavage of fats. As improved saponification was not followed by improved absorption, it seems evident that the impairment of utilization was not dependent on deficient splitting of fats.

The original observers of the anomaly just described came to the conclusion that their patient was the subject of a rare inborn error of fat absorption, probably a mendelian recessive characteristic, but they were unable to determine where in the organism the error lies. Miller and Perkins [4] have lately described a companion case exhibiting many features in common with that of Garrod and Hurtley. The patient, a boy, aged 3, had passed separated liquid fat since birth. Unless the steatorrhea may be regarded as a definite pancreatic symptom, there was no evidence of pancreatic disease so far as this was tested. Garrod's case was the second example in one family; hence the assumption of hereditary factors. In this latest report [4] from the Paddington Green Children's Hospital, no other member of the family was known to be similarly affected. Whether or not congenital steatorrhea, like acquired steatorrhea, involes a pancreatic factor cannot be decided at present. We agree with Garrod,[5] however, who finds it difficult to believe that there is any real disease of the pancreas involved. Now that the anomaly has twice been brought clearly to the attention of the medical profession, other instances are likely to be reported, leading to the hope that future investigation will unravel the mystery of a unique congenital physiologic abnormality.

THE PULSE RATE IN RELATION TO METABOLISM AND DIAGNOSIS

In clinical diagnosis the study of the pulse as an index of the heart rate has heretofore been applied largely to consideration of circulatory factors. To F. G. Benedict of the Boston Nutrition Laboratory of the Carnegie Institution is due the credit for having called attention to an apparently striking relationship between metabolism and pulse rate in normal subjects. In company with Murchhauser,[6] for example, he made observations before and after a light meal, during sleep and while awake, and after changing from the lying position to a sitting position, and noted that with the resultant percentage increase in metabolism there was a simultaneous and corresponding increase in the pulse rate, indicating a quantitative relationship. Numerous

1. A review of such cases is given by Fitz: Tr. Cong. Am. Phys. and Surg. **6**: 36, 1903.
2. Opie, E. L., in Osler-McCrae: Modern Medicine **3**: 600.
3. Garrod, A. E., and Hurtley, W. H.: Congenital Family Steatorrhoea, Quart. J. Med. **6**: 242 (Jan.) 1913.
4. Miller, R., and Perkins, H.: Congenital Steatorrhoea, Quart. J. Med. **14**: 1 (Oct.) 1920.
5. Garrod, A. E.: Lancet **1**: 749 (April 3) 1920.
6. Benedict, F. G., and Murchhauser, H.: Energy Transformations During Horizontal Walking, Pub. 231, Carnegie Institution of Washington.

facts further attest that in general a low pulse rate prevails under conditions in which the metabolism is undoubtedly lowered. This is true in fasting persons, in whom the heart beat may drop to 50 or less a minute. Various observers agree, however, that an exact relationship between pulse rate and metabolism holds only when the records are derived from the same person. Comparisons between different persons cannot be made with accuracy in this manner.

There are conditions, notably in hyperthyroidism, in which a salient differentiating characteristic is the heightened metabolism. To this an increasing amount of attention has been directed of late; and following the lead of Du Bois,[7] the estimation of basal metabolism has become a routine clinical possibility in this country, particularly as an index of the degree of toxicity in hyperthyroidism.[8] But such determinations are time consuming and require expert assistance. Opportune, therefore, is the growing evidence that the resting pulse rate may be a tolerably good index of a patient's progress. Means and Aub[9] have correctly pointed out that the pulse rate gives only comparative results, for between the metabolism elevation and pulse elevation of different individuals there seems to be little relationship. The pulse rate, therefore, is not an index of the absolute degree of intoxication in the patient seen for a single time, but it does furnish a relative index in a patient seen at different times.

The still more recent studies of Sturgis and Tompkins[10] at the Peter Bent Brigham Hospital lead to a similar conclusion. In the course of nearly five hundred determinations of the basal metabolism on 154 patients with hyperthyroidism, there was a tachycardia of 90 or more to the minute, associated with a basal metabolism of + 15 per cent. or more in all but 14 per cent. In seventy instances, when the metabolism fell to normal there was a simultaneous fall in pulse rate in 78 per cent. to below 90. In fifty-two patients on whom a number of metabolism determinations were made, the pulse rate gave an accurate idea of the course of the disease as compared to the basal metabolism in 85 per cent. Discrepancies between pulse rate and metabolism admittedly occur, and no explanation, aside from occasional heart block, has yet been discovered. Nevertheless, we can agree with the Boston observers so far as the fact that a pulse rate at complete rest below 90 a minute is seldom, and below 80 a minute is rarely associated with an increase in metabolism, is of practical importance in the recognition of the large group of nervous patients who have symptoms similar to those occurring in hyperthyroidism. There are many instances of tachycardia that come to the attention of the clinical observer. They appear frequently in cases of so-called "irritable heart"; but however rapid the pulse may become after even slight mental or physical strain, with rare exceptions complete rest leads to greatly lowered figures. Hyperthyroidism may thus be ruled out, particularly when the diagnosis is verified by the finding of a normal metabolic rate.

7. Du Bois, E. F.: Metabolism in Exophthalmic Goiter, Arch. Int. Med. **17**: 915 (June) 1916.

8. See, for example, McCaskey, G. W.: The Basal Metabolism and Hyperglycemic Tests of Hyperthyroidism, with Special Reference to Mild and Latent Cases, J. A. M. A. **73**: 243 (July 26) 1919.

9. Means, J. H., and Aub, J. C.: The Basal Metabolism in Exophthalmic Goiter, Arch. Int Med. **24**: 645 (Dec.) 1919.

10. Sturgis, C. C., and Tompkins, E. H.: A Study of the Correlation of the Basal Metabolism and Pulse Rate in Patients with Hyperthyroidism, Arch. Int. Med. **26**: 467 (Oct.) 1920.

Current Comment

VITAL IMPORTANCE OF THE SYMPATHETIC GANGLIONS

The striking phenomena following the extirpation of seemingly insignificant structures like the parathyroid glandules illustrate the importance that must be attached to such organs. The continuance of life is hinged on the physiologic functioning of more than one such comparatively small group of specialized cells. The discovery that specific hormones are presumably elaborated in various localities in the body through the activity of particular tissues has increased our respect for undescribed possibilities inherent in any organ, large or small, through the medium of so-called internal secretion. Hence one is prepared to review with respectful attention the evidence published by the late Dr. Meltzer[1] with respect to the importance of the superior cervical ganglions. The conclusion that he reached from one of his last researches, showing that death almost inevitably followed even the most careful surgical removal of these structures, was that they contain a principle that is essential for the maintenance of life. Furthermore, the question is raised as to whether or not other sympathetic ganglions also possess some sort of internal secretion. These are not the hasty suggestions of a novice, but the well considered deductions of an experienced and resourceful investigator. What will the final answer be?

THE MODERN SUBSTITUTE FOR THE SHOTGUN PRESCRIPTION: POLYVALENT VACCINES FOR COLDS

At least five commercial manufacturers of biologic products make and push vigorously the sale of vaccines to prevent colds. Of these at least two, from time to time, have added new strains of bacteria to the formulas with which they originally introduced their products, so that seventy-five or eighty different types of bacteria are now included. For such products the manufacturers claim a scientific basis because the organisms have been isolated from persons with colds, and great polyvalence because of the great number of organisms included in the vaccines. As THE JOURNAL has said repeatedly, every year different types, varieties and species of bacteria have been associated with colds in different parts of the country. Presuming—although it has never been proved—that any vaccine has value in preventing colds, what is the logical and scientific thing to do? Obviously, prepare a specific vaccine for each

1. Meltzer, S. J.: Are the Superior Cervical Ganglia Indispensable to the Maintenance of Life? Proc. Nat. Acad. Sc. **6**: 532 (Sept.) 1920.

form of cold in each part of the country. But that which is most scientific is not always most profitable. Commercially it is much easier to mix all the different bacteria together, to prepare a vaccine, to inject it into the patient and to hope that some organism will produce antigens which will find a mate. If a physician is curious, he may ask what becomes of all the bacterial débris that the patient receives. He may wonder how much asthma is produced by sensitization through the inoculation of such foreign proteins. If he should ask the manufacturer he would find that the manufacturer does not know. Should he ask why eighty organisms were included—as advertised by one manufacturer—he would be met with an argument of bewildering pseudoscience. If the physician is inclined to be inquisitive—as he ought to be—he can ask the manufacturer why he stopped at eighty—why not include all of the multitude of strains and types of streptococci, pneumococci and influenza bacilli? We used to ridicule the old shotgun mixture of drugs; the present day biologic shotgun mixture is much more ridiculous—and a greater menace to public health and to scientific medicine.

REACTIONS TO KILLED BACTERIA INTRODUCED INTO THE BLOOD

In the early studies of immunity an attempt was made to explain resistance on a single general condition, such as the action of body fluids or of certain leukocytes. At present it is recognized that resistance to bacterial infection is an involved biologic reaction embracing many factors which are often complex and interdependent. Recently Nagaó [1] has studied the cellular changes that follow the intravenous injection of killed nonhemolytic streptococci into guinea-pigs. Free cocci could be found in the blood for only thirty minutes after injection, and these were usually in clumps of platelets. Most of the cocci were taken up in leukocytes within five or ten minutes, and cocci could be found in circulating leukocytes for as long as three hours. The cocci and polymorphonuclear leukocytes accumulate in the lungs during the first ten minutes, and it is here that most of the cocci reach the interior of the phagocytes. At the same time there is a general leukopenia, and the polymorphonuclear leukocytes of the spleen are reduced to about one-fourth the normal number. There is a similar reduction of such leukocytes in the bone marrow. After thirty minutes the lungs are nearly normal, the number of leukocytes in the blood may be normal or increased, and there is a beginning accumulation of the leukocytes in the liver and spleen. There is also a marked proliferation of the endothelial cells of the liver and spleen, and of the leukocytes of the bone marrow. In from two to three hours there is a marked accumulation of leukocytes with ingested cocci in the liver and spleen, the number of leukocytes in the blood is increased, and immature leukocytes appear in the blood and bone marrow, indicating an exhaustion of the leukocyte-forming power of the marrow. It is suggested that changes similar to those in the marrow take place in the endothelial cells of the liver and spleen. From these observations it appears that leukopenia as well as a hyperleukocytosis may be associated with an irregular distribution of the leukocytes because of local positive chemotaxis. These results throw light on the leukopenia in certain infectious diseases. It also emerges that vaccines must be given with great caution in acute infectious diseases, lest the already overworked blood-forming organs be subjected to complete exhaustion and the results be fraught with danger. As suggested by Nagaó, the reaction of a patient to vaccine treatment may be determined in some degree by frequent examination of the blood, the appearance in it of immature leukocytes indicating danger of exhaustion of leukocytogenic centers in marrow and elsewhere.

1. Nagaó, K.: The Fate of Killed Nonhemolytic Streptococci Injected into the Blood, and the Resulting Cellular Changes, J. Infect. Dis. 27: 327 (Oct.) 1920.

THE REACTIONS FOLLOWING INTRAVENOUS ADMINISTRATION OF ARSPHENAMIN

The untoward symptoms that still frequently follow the intravenous administration of arsphenamin have been a cause of much concern to therapeutists. Despite the years that have elapsed since this mode of treating syphilis was first instituted as the result of Ehrlich's investigations, the difficulties encountered have not yet been overcome. Among the explanations advanced to account for the febrile and other symptoms that are occasionally encountered is the view that a rapid destruction of spirochetes by the drugs results in a liberation of microbial endotoxins which bring about the more or less severe reactions in the patient. This hypothesis, however, has been made untenable or at least reduced to a relatively minor significance by the recent demonstration that both syphilitic and nonsyphilitic patients may experience similar reactions following the intravenous injections of arsphenamin. As the result of these observations by Strickler [1] and others at the Jefferson Medical College of Philadelphia, it appears that the most important factor in the production of certain of the undesired arsphenamin reactions is the medicament rather than the patient. In fact, it is the conclusion of these Philadelphia clinicians that the untoward phenomena may be produced by some impurity in the arsphenamin or by some chemical reaction between the arsphenamin and the chemical constituents of the blood, or the two factors may be operative at the same time.

1. Strickler, Albert: A Clinical Study of the Reactions Following the Intravenous Administration of Arsphenamin in Nonsyphilitic Persons, Arch. Dermat. & Syph. 2: 692 (Dec.) 1920.

INCOME TAX REPORTS

After the holidays comes the income tax; it is fortunate for our happiness and peace of mind that the order is not reversed. During the next few days all physicians who paid an income tax last year will probably receive blanks on which income returns for the year 1920 are to be made. Those who do not receive them should secure copies from the collector of internal revenue of their district. Since the tax was assessed last year, there have been a few unimportant changes in the regulations. In a later issue, THE JOURNAL will discuss, in detail, the income tax as it affects physicians.

Under the law every person having an income of $1,000 or over must file a schedule showing the amount on which he should be taxed, or, if exempt, the reasons for exemption. Officers of the Internal Revenue Service say that frequently physicians to whom blanks are sent simply write "No taxable income" across the face of the blank and return it without details or affidavit. This is not sufficient to comply with the law. The burden of proof as to exemption is on the individual. Those who are exempt must prove it, not by general statements, but by sworn details. Regardless of the amount of taxes paid, it is a good thing for a doctor to make out a balance sheet every year. For this reason, the law has been of great practical value to physicians. By compelling them to keep an accurate record of business expenses, separate from personal expenses, and to deduct the annual cost of carrying on their business from their gross receipts, it has given physicians a more accurate idea of their actual income. Perhaps, in time, if the Treasury Department will permit a study of the income tax reports of physicians, it may be possible to answer accurately that much discussed question, "What is the average physician's income?"

"CHIROPRACTIC"

A Pennsylvania physician sends us some advertising leaflets issued by a "chiropractor" in his vicinity. The leaflet is one of those that are printed by the hundred thousand and sold to individual chiropractors, having the purchaser's name printed on the leaflet to give a personal touch. Our correspondent comments:

> I am enclosing an example of the flagrant nonsense which the public is being handed and is accepting. The man whose name is printed on this circular as the chiropractor was a schoolmate of mine. He finished his education in the grammar school, while I kept on, not earning a penny until I became twenty-four years of age.
>
> On the day I left my home and office in July, 1917, for the Army this man, who is now a "chiropractor," was perched on a ladder across the street painting a house. Six months later, in camp, I received my home newspaper containing his noisy advertisement. He had acquired the prefix "Dr." and was flourishing. At the present time he boasts of two offices, a flourishing "practice" and an automobile. In my home town of 50,000, five more chiropractors have established offices within the past three years and are doing business.

We are not sure that any comment is necessary; the letter is an editorial in itself. However, it may be worth while to point out that the profession that is devoted to the relief and cure of human ailments is the only one that will permit men without technical knowledge to ply their vocation with impunity—provided these ignoramuses speciously plead that they are representatives of a new "school" of healing. It is not conceivable that a man whose only training was a six months' correspondence course would be put in charge of a locomotive. It is equally inconceivable that a man with a few weeks' reading of law would be admitted to the bar and entrusted with cases that might involve large financial interests. But a street cleaner or a garbage collector can take a six months' "course" in "chiropractic" and be permitted by the commonwealth to hold himself out as competent to treat the most complicated piece of mechanism known—the human body.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Gift to Hospital.—The Huntsville Rotary Club has voted to donate to the Huntsville Hospital a fund of $500 which was being held for a proposed memorial hospital.

County Tuberculosis Society.—The Dallas County Tuberculosis Association was recently organized at Selma. The association plans to ask for special legislation to form a county health unit with a full-time county health officer.

Memorial Hospital Under Construction.—A site has been selected for the Susie Stringfellow Memorial Hospital at Anniston, for the construction of which a bequest was left by Mrs. W. W. Stringfellow. The hospital will be located on a hill on Leighton Avenue, between Eighteenth and Nineteenth Streets, on the site of the old Anniston high school which later was the Stringfellow residence grounds. The institution will have accommodation for fifty patients. At the death of W. W. Stringfellow, husband of the deceased donor, the Stringfellow residence will be converted into wards. The buildings will cost approximately $100,000.

ARKANSAS

State Board of Health Appointed.—Dr. Leonidas Kirby, Harrison, has been appointed a member of the state board of health to succeed Dr. J. T. Clegg, Siloam Springs, resigned, and Drs. Octavius L. Williamson, Marianna, Henry L. Montgomery, Gravelly, and Fergus Olamb Mahoney, Eldorado, have been reappointed.

Model Health Law Recommended.—Dr. Charles Willis Garrison, Little Rock, state health officer, has made an appeal to the governor for the passage of legislation to amend the state health act to provide for the appointment and payment of a full-time local health officer. It is proposed to divide the state into districts, each in charge of a full-time health officer, with a staff of inspectors and nurses, and with adequate laboratory facilities.

CALIFORNIA

New Tuberculosis Clinic.—San Bernardino County Tuberculosis Association has opened a new free tuberculosis clinic in San Bernardino.

Society Will Celebrate Semicentenary.—The Los Angeles County Medical Association will celebrate the fiftieth anniversary of its founding by a banquet on the evening of January 21. Drs. Walter Lindley, Joseph Kurtz and J. P. Widney, three of the original founders, will be the guests of honor.

Forged Death and Burial Certificates.—It is reported that Frank Hapgood, an undertaker of Palo Alto, recently pleaded guilty to a charge of forging the name of Dr. Robert Gallaher Reynolds, Palo Alto, to a death certificate, and that of S. A. Winnegar, Mountain View, assistant county health officer, to a burial certificate. The offense with which Mr. Hapgood was charged is alleged to have been committed early in July in connection with the death of the 4 year old daughter of a prominent Christian scientist of Palo Alto. At the time the child contracted its fatal illness the mother called in Dr. Reynolds, who pronounced the case scarlet fever. Thereafter, it is said, the physician was dismissed and a Christian science practitioner was called in. The child died, July 7. It is claimed that the mother feared a coroner's inquest and arranged the details of the fraud with the undertaker. The offense is a misdemeanor under the state health laws.

Hospital Notes.—Ground was recently broken for the erection of the Orthopedic Hospital and School, in Brockman Court and Palm Drive, near West Adams Street, Los Angeles. The hospital was made possible through the generosity of the Los Angeles Orthopedic Foundation, in cooperation with the Crippled Children's Guild, which owned the site. It is designed to give crippled children careful orthopedic treatment and to train them for a period of time by reeducational methods. The building will be erected at a cost of $100,000, and $50,000 additional will be spent for equipment. ——Construction work has been started on the new hospital

at Whittier, for which the sum of $250,000 was donated by Simon J. Murphy, Jr., Pasadena, as a memorial to his father and sister. The institution will be constructed in one of the municipal parks.——The Kern County jail will be transformed into a county hospital for the care of the sick and indigent.——The new Kaweah Hospital, at East School and Northwest Street, Visalia, was formally opened for the reception of patients, December 20. The hospital has accommodations for twenty-five patients and is located on the site of the old Garcia home. It was erected by the Visalia Medical Association and will be conducted as a public hospital to replace the Visalia General Hospital.

COLORADO

Society Organizes Campaign Against Fraud.—At the annual meeting of the El Paso County Medical Society, held at Colorado Springs, December 8, plans were adopted for a vigorous campaign to eliminate all quack medical advertising and practices, and to rid the county of all sure cure ads and charlatans. Mr. H. H. Fawcett, president of the Ad Club, delivered an address on "Ethical Advertising," and outlined certain steps in the investigation and rejection of fraudulent advertisments by lay dailies and journals. The *Evening Telegraph* has refused to accept advertisements from several local concerns and has rejected requests for paid space from agents representing nationally advertised nostrums.

DISTRICT OF COLUMBIA

Society Formally Opens New Headquarters.—The Medical Society of the District of Columbia gave a reception to its president and other officers, January 12, when a special opportunity was given to the members and friends of the society to inspect its new home at 1718 M Street N. W.

Johns Hopkins Students Visit Hospital.—The senior class of Johns Hopkins University Medical School, consisting of ninety students, came to Washington, January 8, for the purpose of studying the methods employed in the care and treatment of the disabled soldiers at Walter Reed General Hospital. The class was in charge of Dr. John M. T. Finney, professor of surgery, who was accompanied by several other members of the faculty.

FLORIDA

State Health Laboratory Building.—Work has been begun on the erection of the laboratory of the state board of health at West Palm Beach. The new building will be located on the north side of Fourth Avenue, west of the Dixie Highway, within 300 feet of the Florida and East Coast Railway Station. The total cost of the laboratory will be $34,500.

GEORGIA

Wesley Memorial Hospital.—The Wesley Memorial Hospital and Candler Memorial Hospital for Women and Children for which a fund of $1,000,000 was provided by the children of Asa G. Candler, as a memorial to their mother, is under construction in Atlanta. Emory University School of Medicine will utilize the facilities of the hospital for the clinical training of its medical students. A campaign for funds for the purchase of special equipment is being conducted by Methodists of Georgia and neighboring states.

IDAHO

Osteopath Convicted of Medical Practice Violation.—It is reported that W. A. Sawyer, an osteopath of Twin Falls, was recently convicted in the Twin Falls district court on the charge of violating the state medical practice act by performing a major surgical operation. It was contended by the attorneys for the defense that W. A. Sawyer was a graduate of a medical school, although this school was not on the approved list of the state, and that at that school he had taken the regular courses in osteopathy, including surgery. This testimony, however, was ruled out by the trial judge. The state maintained that an osteopath is licensed to practice osteopathy, and not to prescribe medicines or perform major surgical operations. The prosecution was instituted by the state department of law enforcement on the recommendation of the attorney-general.

ILLINOIS

State Health Department Appointments.—Dr. Frank P. Ault, Shelbyville, has been appointed district health officer, division of communicable diseases, and Dr. Ralph Nauss has been appointed assistant epidemiologist, division of communicable diseases.

Sanitation of Swimming Pools.—A preliminary survey of all swimming pools of the state has been made by the State Department of Public Health. It is planned to make a detailed inspection of each pool in the near future and to issue a state bulletin on the sanitary construction and hygienic operation of swimming pools, based on the practical observations of the survey.

State Care of Poliomyelitis Cripples.—A section of the new building of St. John's Sanatorium, located on a farm near Springfield, which was opened, January 1, has been assigned to the care of crippled children. This work will consist largely in the after-care and reeducation of victims of poliomyelitis and will be under the supervision of Dr. Clarence W. East, chief of the division of child hygiene and public health nursing of the State Department of Public Health.

Chicago

Fund for Free Children's Clinics.—The profits derived from the Health and Sanitation Exposition held at the Coliseum in November last, will be applied toward the establishment of free dental and eye clinics for poor children at the hospital maintained by the school of home and public health nursing of the Chicago Health Department. The fund will be expended under the direction of Health Commissioner John D. Robertson.

Warrants Name Physicians.—It is reported that warrants have been asked for by the office of the Illinois prohibition officer charging that Dr. E. P. Murdock, who is said to be president of the recently organized American Protective Medical Fraternity, and Dr. Eldorado Scott, reported to be also an officer of the fraternity, have issued prescriptions bearing fictitious names. It is further alleged that emergency prescriptions allowing the holder to procure one pint of whisky at drug stores were issued by Dr. T. J. Parker and Dr. J. W. Koehn, and warrants were asked for their arrest.

INDIANA

New Health Board Secretary.—Dr. Frank E. Ray, Shelbyville, has been appointed secretary of the Shelbyville Board of Health to succeed Dr. Bayard G. Keeney, recently elected coroner.

Model Health Law Proposed.—The all-time health officer bill has been endorsed by the state board of health and will be presented to the Indiana state legislature. The bill proposes the adoption of the system of full-time health officers, at the option of the individual counties, except that in cases where the county commissioners take no steps to establish the system, the right to petition for a referendum is given the voters of the county.

KENTUCKY

Personal.—Dr. Hiram Eggers has been appointed assistant city health officer of Louisville.

New Hospital Ready for Patients.—The Mason Memorial Hospital at Murray, which has been under construction for several months, is practically completed and will be ready for the reception of patients within a short time. The new hospital will have accommodations for 150 patients. A residence has been purchased which will be remodeled and used as a nurses' home and training school.

MARYLAND

Personal.—Dr. Robert P. Bay, medical examiner for the State Industrial Accident Commission and former superintendent of University Hospital, has been appointed a member of the Board of Supervisors of City Charities, to succeed Dr. J. Whitridge Williams, resigned.

University Hospital Acquires Land.—The University of Maryland Hospital has purchased a block of ground on the north side of Lombard Street. Work on an addition to the hospital will probably be begun in the spring. Several months ago a campaign was conducted to raise the necessary funds for meeting the additional needs of the hospital.

Meetings.—Dr. William C. Hoad, professor of Sanitary Engineering, University of Michigan, gave a lecture, January 10, on "Some Relations of Engineering to Public Health," at the School of Hygiene and Public Health, Johns Hopkins University.——At a meeting of the Medical Society and Historical Club of the Johns Hopkins Hospital, held January 10, in the Medical Amphitheater, Dr. Edward H. Hume, dean of Yale Medical College, Changsha, Hunan Province, China, delivered an address on "The Strength and Weakness of Chinese Medicine."

MICHIGAN

Convicted of Narcotic Act Violation.—It is reported that Dr. Arthur Sevensma, Grand Rapids, was sentenced to serve one year and three months in Leavenworth prison for violation of the Harrison Narcotic Act, and that Dr. George W. King, Charlevoix, was sentenced to serve one year and a day for a similar offense.

MINNESOTA

Health Association Meeting.—At the annual meeting of the Minnesota Public Health Association, recently held in St. Paul, the following were elected officers for the ensuing year: president, Dr. Charles L. Scofield, Benson, vice presidents, Mrs. H. A. Patterson, Mankato, and Dr. Albert J. Chesley, Minneapolis, and secretary, Mrs. A. H. Vernon, Little Falls.

Economy in Health Work.—A health center to house nineteen official and nonofficial health agencies now operating in Minneapolis is urged in the *Hennepin Commonhealth*, a weekly publication issued by the Hennepin County Public Health Association. At present these agencies operate in unrelated offices located in various parts of the city and there is much duplication of work in some fields while other fields are neglected. It is proposed to erect a central building in which the nonofficial as well as official agencies may be housed, and where headquarters may be established for local medical and dental societies.

NEW JERSEY

Society Organizes Professional Guilds.—The welfare committee of the Medical Society of New Jersey is conducting an active campaign to prevent legislation considered inimical to the public health. The committee has organized professional guilds in the various districts throughout the state, the three latest being established in Morris, Warren and Hunterdon counties. The membership of each organization is composed of physicians, dentists, druggists and nurses in the particular district. The welfare committee of the society is composed of Drs. Wells P. Eagleton, Newark, Thomas W. Harvey, Sr., Orange, Philander W. Harris and Andrew F. McBride, Paterson, Henry B. Costill, Trenton, Donald Miner, Jersey City, Clifford Mills, Morristown, and James Hunter, Westville.

NEW YORK

New York City

Personal.—Dr. Louise Pearce recently returned to this country, after six months' study of African sleeping sickness in the Congo under the auspices of the Rockefeller Institute for Medical Research.

Lectures on Radium Therapy.—The health department is conducting a series of lectures on the curability of many forms of cancer in early stages by radium therapy. The object of the lectures is to allay the fear of surgery and impel persons suffering from malignant disease to seek examination and treatment early in the course of the disease.

Hospital Opens New Department.—The New York Hospital announces the opening of a urological department in accordance with the terms of the will of the late James Buchanan Brady, in temporary quarters assigned to the department in the hospital. An outpatient clinic will be carried on in the outpatient department of the hospital.

Quarantine Station to Federal Health Service.—The U. S. Public Health Service will take over the quarantine station of the port of New York on presentation by state officials of proof of title to the premises. When this transfer is made the Federal Government will be in control of all quarantine establishments at the ports of the United States.

Columbia University Plans New Medical School.—According to announcement made by W. Barclay Parsons, chairman of the board of trustees of Columbia University, plans have been formulated for raising $10,000,000 to build and endow a new medical school in connection with Columbia University, to supplement the present College of Physicians and Surgeons.

Canned Beef Causes Botulism.—The first officer and five members of the crew of the Greek S. S. *Iokasti*, anchored off Clifton, Staten Island, recently partook of tinned beef that had been on a shelf in the galley for four months. All became violently ill, and three of the victims died in the State Island Hospital. A necropsy disclosed that they had died from botulism.

Campaign for Cardiac Children.—A conference to consider the problem presented by the large number of children of school age who suffer from cardiac troubles was held at the Hotel St. Regis, January 6, under the auspices of the committee for the Mineola Home for Cardiac Children. The conference marked the opening of a week's campaign to raise $40,000 in special revenue bonds for employment in the control of cardiac children of school age, caring in all for 470 children.

City Hospitals Report Increase in Alcoholism.—The records of Bellevue and the Allied Hospitals, the Harlem, Gouverneur, Fordham and Kings County hospitals, show an increase of practically 100 per cent. in the number of cases of alcoholism during the last six months over the same period in 1919. In the Kings County Hospital the increase from August 1 to December 8 was 106.6 per cent. The number of cases treated during the first six months of 1920 was almost the same as for the first half of 1919. At Bellevue Hospital there were 807 cases during the last six months of 1919, and approximately 1,425 in the corresponding period of 1920.

Memorial Meetings to Dr. Meltzer.—The stated meeting of the New York Academy of Medicine, January 6, was held in association with the Society for Experimental Biology and Medicine and the Harvey Society as a tribute of appreciation to the life and services of Dr. Samuel James Meltzer. Memorial addresses were made by Drs. George B. Wallace, Phoebus A. Levene, William H. Howell, Baltimore, Graham Lusk, New York, and William H. Welch, Baltimore.——At a special meeting of the council of the New York Society for Thoracic Surgery, a memorial resolution was adopted on the death of Dr. Samuel J. Meltzer, a member of the society and first president of the American Association for Thoracic Surgery. The resolution testified to the value of Dr. Meltzer's discovery of the method of overcoming the dangers of acute operative collapse of the lung by means of intratracheal insufflation as an epoch making contribution to thoracic surgery.

NORTH CAROLINA

Personal.—Dr. Alexander C. Bulla has been reelected health officer of Forsyth County.

Tuberculosis Clinics.—Free tuberculosis clinics will be held in Robeson County, January 25 to February 5, inclusive.——The tuberculosis clinic of the city health department of Charlotte has been moved from the city auditorium to the old Methodist parsonage on North Tryon Street, where six rooms have been set aside for the activities of the clinic.

Hospital News.—The Baptist Hospital of North Carolina, recently authorized by the organized Baptist Church, will be located in Winston-Salem according to an announcement of the committee chosen to select the site. The city has offered a site of 13 acres, with a bonus of $100,000 in cash. Greensboro, Raleigh, Goldsboro, and Asheville were active competitors for the location. Construction work will be started soon on the new hospital, which when completed, will be the largest general hospital in the state.——Clarence Barker Memorial Hospital at Biltmore, near Asheville, was destroyed by fire on the night of January 2. The hospital was a wooden structure, built about twenty years ago by the late George W. Vanderbilt of New York for the employees of his Biltmore estate, and after his death transferred to a board of trustees. The loss, estimated at $45,000, is covered by insurance. It is the purpose to rebuild the institution on an elevated knoll in Biltmore village, at a cost approximately $250,000.——The cornerstone was laid early in December for the addition to the Good Samaritan Hospital, Charlotte, which is designed to care for negro patients.

OHIO

Personal.—Dr. Edgar L. Vermilya has been appointed health commissioner of Sandusky County.

Memorial Tablet to Physician.—A tablet in memory of the late Dr. Martin Stamm, Fremont, who died, May 22, 1918, has been placed in position in the main corridor of the Memorial Hospital of Sandusky County at Fremont. The bronze tablet, which includes a medallion bust of Dr. Stamm, will be dedicated by the medical society at a later date.

OKLAHOMA

New Hospital at Ada.—A new hospital to be known as St. Joseph's Hospital, is to be established at Ada by a corporation headed by Dr. Joseph G. Breco. A two story and basement structure of brick and terra cotta is planned, with accommodations for seventy beds, the estimated cost of construction to be $50,000.

OREGON

Health League Headquarters.—The headquarters of the newly organized league for the conservation of public health have been established in offices at 638 Morgan Building. Dr. Frank M. Brooks, Portland, has been chosen permanent chairman of the executive committee and the following physicians have been appointed members of the advisory committee: Drs. Otto C. Hagmeier, Seaside, Leon W. Hyde, Hillsboro, Roy W. Hendershott, Bend, William C. Smith, Salem, and William H. Dale, Eugene.

PENNSYLVANIA

Fined for Practice Act Violation.—It is reported that J. W. Wood, a negro of Uniontown, was fined $200 and costs on a charge of practicing medicine without a license.

Health Department Appointments.—Dr. W. C. Stewart has been appointed medical inspector of school for Cross Creek township, Washington County.——Dr. Robert K. Rewalt has been named chief of the child health station at Williamsport, and Dr. Charles F. Lynn, chief of the station at Monongahela.——Dr. William R. Lavering has been appointed chief of the new tuberculosis clinic at Stroudsburg.

Philadelphia

Motors Kill 237 in 1920.—More fatal motor car accidents occurred in Philadelphia in 1920 than in any other year since automobiles came into popular use. Statistics disclose that 237 persons were killed last year by motors, an increase of fourteen over 1918, the next highest record. In 1906, when the use of motor cars became general, twelve persons were killed, and since, the list has grown gradually each year. A slight decrease was noted in 1919. Deaths from all traffic accidents in 1920 numbered 420, exclusive of thirteen deaths in elevator accidents.

SOUTH DAKOTA

Health Officer Resigns.—Dr. Israel P. P. Hollingsworth has resigned as health officer of Sioux Falls.

Society Elections.—At the annual meeting of the Sioux Falls District Medical Society held, December 9, the following were elected officers: president, Dr. Edmund D. Putnam; vice president, Dr. Monte A. Stern, and secretary-treasurer, Dr. Stephen A. Donahoe.

UTAH

Campaign Against Venereal Diseases.—Dr. P. I. Jenson, Salt Lake City, has been placed in charge of the campaign against venereal diseases now being conducted by the state board of health with the cooperation and financial support of the U. S. Public Health Service.

Lectures on Child Nutrition.—Dr. Caroline Hedger, Chicago, will give a series of classes in nutrition and other subjects related to child health, at Salt Lake City during the week beginning January 24. The lectures will be given at a "farmers' and housekeepers' roundup," held by the Utah Agricultural College under the auspices of its department of home hygiene and nursing.

VIRGINIA

Negro Sentenced for Unqualified Practice.—It is reported that Jack Thompson, colored, of Lynchburg, was recently sentenced to serve thirty days in jail and to pay a fine of $50 on a charge of practicing medicine without a license.

New Health Associations.—Pittsylvania County Public Health Association was organized at Chatham early in December.——James City and County Public Health Association was organized at Williamsburg, under the presidency of Prof. C. D. Hart of William and Mary College.

WISCONSIN

Examining Board Appointment.—Dr. Spencer D. Beebe, Sparta, has been appointed a member of the state board of medical examiners to serve the unexpired term of Dr. Henry W. Abraham, Appleton, deceased.

Offers Memorial to Physician.—Mr. G. E. Buchanan, life long friend of Dr. H. W. Abraham, formerly president of the Wisconsin State Medical Society and a member of the state board of medical examiners, has offered $7,500 for the erection of a monument as a memorial of the work of the physician, provided an equal amount is raised by popular subscription.

CANADA

Personal.—Dr. O. R. Avison delivered a lecture on "Medicine in the Far East" before the Academy of Medicine, Toronto, January 4. Dr. Avison was formerly connected with the University of Toronto, but twenty-five years ago left for Chosen (Korea). He is now touring the United States and Canada for the purpose of arousing the interest of physicians in medical science in Asia.

Czechoslovakian Commission.—The Czechoslovakian commission, which is making a tour of the United States and Canada for the purpose of studying the methods of public health institutions in North America, was in Toronto last week. Dr. Charles J. Hastings, Toronto, Dr. John W. S. McCullough, chief officer of health for Ontario, Dr. John G. Fitzgerald, professor of hygiene in the University of Toronto, and Dr. George D. Porter, secretary of the Canadian Association for the Prevention of Tuberculosis, accompanied the visitors on their trip to local institutions.

Decade of Public Health Progress in Ontario.—The Ontario Board of Health has published in pamphlet form an address by Dr. John W. S. McCullough, chief medical officer for Ontario, reviewing the progress of public health work in that province in the last ten years. The Ontario Health Act was consolidated in 1912 at which time the district medical officers in the province were appointed, and full-time health officers began to take charge of public health administration. An extended educational campaign was initiated, and this work has been continued to the present year, when $9,000 is available for the purpose. In 1910 the board had two laboratories; there are now four, and these will shortly be increased to seven by the establishment of new laboratories in Fort William, North Bay, and the "Soo." During the World War the laboratory in Toronto supplied almost all typhoid and paratyphoid vaccine for the Canadian Army free of cost, and recently the board has begun the production of phenarsenamin (arsphenamin).

GENERAL

Tri-State Medical Society Meeting.—The annual meeting of the Tri-State Medical Society of Virginia and the Carolinas will be held at Spartanburg, S. C., February 16-17.

Meeting of Sioux Valley Eye and Ear Academy.—The sixteenth semiannual session of the Sioux Valley Eye and Ear Academy, composed of specialists resident in Iowa, Nebraska and South Dakota, will be held in Sioux City, Iowa, January 19, under the presidency of Dr. James E. Reeder, Sioux City. Headquarters will be at the Hotel Martin.

Pacific Surgeons Elect Officers.—At the annual meeting of the North Pacific Surgical Association, held at Spokane, Wash., December 11, the following officers were elected for the ensuing year: president, Dr. Robert E. McCletchnie, Vancouver, B. C., vice presidents, Drs. John B. McNerthney, Tacoma, Wash., and W. B. Holden, Portland, Ore., and secretary-treasurer, Dr. Alvin W. Baird, Portland, Ore.

Director of Peking Medical School.—Dr. Henry S. Houghton has been appointed director of the Peking Union Medical College, which is conducted by a board of trustees chosen by the Rockefeller Foundation. Dr. Houghton was formerly physician of the Wuhu General Hospital, dean and professor of tropical medicine of the Harvard Medical School of China in Shanghai, and recently a member of the staff of the China Medical Board and Peking Union Medical College.

Bequests and Donations.—The following bequests and donations have recently been announced:

French Hospital of San Francisco, 250 shares of White House capital stock; Children's Hospital, French Society for the Relief of the Women of France, and Firemen's Widows and Orphan's Aid Association, each $5,000, by the will of Raphael Weill.

Children's Hospital, Philadelphia, $30,000, Hahnemann and Jefferson hospitals, each $5,000, by the will of Henry Fell.

The Permanent Blind Relief War Fund, New York, $5,000, a Christmas gift from the president of the organization, William Nelson Cromwell.

Brockton (Mass.) Hospital, $50,000, by the will of George E. Keith.

LATIN AMERICA

Gift of Medical Models.—The school of medicine of Rio de Janeiro has presented the medical school of Montevideo with a series of wax models to supplement a similar gift made some time ago.

Cuban Medical Congress Postponed.—At a recent session of the organizing committee it was decided to postpone the meeting of the Fifth Cuban Medical Congress from February 24 to May 22. The congress will last a week.

First Child Congress in Mexico.—At the Primer Congreso Mexicano del Niño, which began its sessions, January 2, many representatives of scientific and charitable institutions were in attendance and presented papers on related subjects. The president of the National University represented the president of Mexico.

Rockefeller Foundation Offers Assistance to Mexico.—Dr. T. C. Lyster of the Rockefeller Foundation has gone to Mexico to make some observations on the present epidemic of yellow fever and offer the assistance of the Foundation in the campaign for the eradication of the disease. The president of Mexico has accepted this offer and Dr. Lyster will return later in January to begin the campaign, the plans for which were submitted by him and are now being considered by the department of public health. Dr. Lyster has been much feted during his stay in Mexico, especially by the officials of the department of public health and of the army and navy sanitary corps.

Personal.—During the absence of Dr. Angel Brioso Vasconcelos, a member of the department of public health, on a trip to the United States, Dr. Everardo Landa, medical inspector, has been in temporary charge of the yellow fever and malaria service.——Drs. Bert W. Caldwell and J. Le Blanc of the Rockefeller Foundation are now in Mexico. The latter has organized a bacteriologic laboratory in the public health office at Vera Cruz.——Dr. J. J. Callejas of Honduras, whose arrival at New York was mentioned several weeks ago, is convalescing there from amputation of a leg.——Dr. A. Noceti, professor of ophthalmology at the University of Buenos Aires, has resigned his chair on account of lack of time for its duties.——Dr. E. Paz Soldán, professor of hygiene at the University of Lima, founder and editor of the *Riforma Médica*, has been lecturing at Buenos Aires as exchange professor, and is to proceed to Montevideo and Rio to inaugurate exchange relations. He also represented Peru at a recent congress at Buenos Aires.——Dr. A. Lindenberg has returned to S. Paulo, Brazil, from a trip to this country.——Dr. G. de Paula Souza and Dr. Borges Viera have returned to S. Paulo, after two years of work for the Rockefeller Foundation in the United States. They take the places of Dr. S. Darling and Dr. W. Smillie in the Hygiene Institute maintained at S. Paulo by the Rockefeller Foundation, the latter officials leaving for the United States. Dr. Paula Souza is now director of the institute.

FOREIGN

Prize Awarded to Kretschmer.—The Karl Faber Endowment at Tübingen has awarded a prize to Dr. E. Kretschmer, privat-dozent of psychiatry and neurology.

Number of Medical Students in Germany.—The *Nederlandsch Tijdschrift* cites statistics to the effect that there were 18,319 students inscribed in the medical schools of Germany last year, in contrast with 16,048 at the beginning of 1914.

Interchange of Professors Between Paris and Madrid.—Six Paris professors are to lecture in Madrid this winter, including Vaquez and Duval. The latter will lecture on the surgery of the lung and the former on erythremia, the disease that bears his name.

Memorial to Achucarro.—A memorial tablet was recently unveiled at the Hospital provincial at Madrid in honor of the brilliant young histologist, N. Achucarro, whose untimely death occurred in 1918. His name is associated with certain staining procedures, and he was on the editorial staff of the *Siglo Médico* and had been for a time in this country.

International Congress for History of Medicine.—The *Gazette des Hôpitaux* announces that the French Société d'histoire de médecine is organizing the second congress, to convene at Paris in August, 1921. Prof. E. Jeanselme is the president of the society. The first congress was held at Antwerp, last fall, and was mentioned at the time in THE JOURNAL, September 25, p. 884, and October 2, p. 951.

Institute for Radiotherapy at Naples.—The daily papers, banks, merchants and other circles in Naples have started a subscription for the purpose of founding an institute for phototherapy and radiotherapy, and the *Riforma Médica* publishes an urgent appeal for aid in the matter, donating 500 lire. Prof. R. Stanziale, Via Roma 368, Naples, is the leading spirit in the movement. He is director of the clinic for skin and venereal diseases and started the subscription with 5,000 lire. Northern Italy already has one institution of the kind at Florence, owing to the initiative of Prof. C. Pellizzari, and one is sorely needed in southern Italy.

Swedish Society for Medical Research.—The recent foundation of this society has been mentioned. Thirteen appropriations have been made already, totaling 30,000 crowns. Among them are appropriations to aid Engfeldt, Henschen, Lundqvist and Frumerie in their research, respectively, on the biochemistry of the acetone bodies; pathology of the brain; treatment of myoma, and respiratory research on exophthalmic goiter. Subsidies were also granted to aid in publishing the *Upsala Läkareförenings Förhandlingar* and the *Acta medica* and *Acta chirurgica scandinavica*. Most of the other appropriations are to promote research in radiology or nutrition.

Contract Practice in Germany.—Our German exchanges state that the krankenkassen, the social insurance societies, have recently held a representative meeting to prepare for repudiation of the existing agreement between the societies and physicians. Their arguments, it is said, were "based on a flood of complaints against physicians," all of which, our exchanges state, can be unconditionally denied. But it is said that the latest agreement was so obscurely worded that trouble was sure to follow. At the meeting, there were delegates from 6,750 krankenkassen, representing 16 millions of the insured. The krankenkassen are feeling the pressure of the high cost of everything.

Surgical and Medical Congresses of the Northland.—It is announced that the tenth congress of internal medicine for the Northland and the thirteenth congress of surgery are to be held at Helsingfors the first week in July, 1921. The subjects appointed for discussion by the internists are syphilis of the central nervous system and syphilis of the viscera. Prof. F. Saltzman is the secretary, Unionsgatan 40, Helsingfors. The surgeons have appointed three topics for discussion: surgical nephritis, introduced by Rovsing of Copenhagen and Runeberg of Helsingfors; myoma; and treatment of contracture and ankylosis, the latter introduced by Bülow-Hansen of Christiania and Frising of Lund. The secretary is Prof. J. Borelius, Lund, Sweden.

Prizes Awarded by the Académie de Médecine at Paris.—The Académie had fifty-two prizes to award this year, but the competition for sixteen did not warrant the distribution of the prize. More than half of the articles offered were on subjects connected with the war. Some of the more important prizes were conferred on Aviragnet and Lutembacher, for their work on cardiac complications in diphtheria; on Bellocq, for research on the anatomy of the internal ear; on Marie and Levaditi, for their serologic and experimental work on general paresis; on Joyeux, for research on cestodes; on Bouquet, for research on intra-uterine life, and on Alezais and Peyron, for research on tumors of embryonal origin. One woman is on the list, Mme. Rodillon, for a "Travail manuscrit avec épigraphe." Several of the prizes were divided, and a number of the awards went to research workers in the French colonies. The great Audiffred prize for a sovereign remedy for tuberculosis was not awarded, but Vaudremer and Rappin were given 2,000 francs from the income for their publications and the latter's tentative vaccination against tuberculosis.

A Swedish View of the American Medical Association's Headquarters.—The Nov. 30, 1920, issue of *Hygiea* contains an illustrated account of the visit to the medical centers of the United States of three professors from the medical schools of Sweden and Norway, written by one of them, Prof. Israel Holmgren, of the chair of internal medicine at the Karolinska Medico-kirurgiska Institut at Stockholm. In describing his visit to Chicago Professor Holmgren says: "One of the most interesting experiences of my stay in Chicago was the opportunity to study the headquarters and the organization of the American Medical Association, which I did very thoroughly. This association comprises 80,000 of the physicians of the United States [in reality, the Association had 83,338 members and 47,045 Fellows at that time.—ED.] I am not quite sure as to the total number of physicians in the United States, but I believe it is 110,000 [148,000]. The American Medical Association has its headquarters at Chicago, where all its departments are collected, and where its periodicals are published. Through Professor Hektoen's cooperation we obtained the opportunity to inspect the building very thoroughly, and one of the officials showed us around in the kindest way, devoting several hours to us. There are nearly 300 persons employed in the building, all exclusively in work for the Association. Several periodicals are published there, foremost among them THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION which we have on file in our headquarters in Stockholm. This publishes a weekly

edition of 70,000 [82,000, if you please] copies in English, and besides this a fortnightly Spanish edition, designed for South America, which contains the principal part of what is published in the English edition. The Association publishes also other periodicals, books and pamphlets in large numbers. A very vigorous war against nostrums is being carried on by this organization. It has its own chemical laboratory, where proprietaries and nostrums in general are analyzed and the results of the analysis are published in the journals and in booklets which are distributed gratis for the enlightenment of the public. There is also kept in the building a card catalogue of all the physicians in the United States. Every physician in the country has a card in this register on which are recorded biographic data, where and when he obtained his medical degree, etc. If he has done anything shady or written medical write-ups or quacked it in any way, it is all recorded here. All the information as to the antecedents of each physician is thus available if required at any time. I am confident also that this organization has done much for the rapid improvement of conditions for members of the profession in the United States."

Deaths in Other Countries

Dr. **Angel Gaviño,** director of the Bacteriologic Institute and one of the most prominent scientists in Mexico. He was for many years professor of public health in the school of medicine of Mexico.——Dr. **L. Concetti,** professor of pediatrics at the University of Rome, and a prominent figure at national and international medical congresses as an authority on children's diseases. He taught that the clinic of adults was the primer for learning pediatrics, and his publications embrace the whole field of children's diseases with much of general medicine, especially the actinomycotic form of the diphtheria bacillus and serous meningitis in children. He was one of the first to describe hypothyroidism, and his Manual of Hygiene for Children has long been a classic.——Dr. **G. de Montmollin** of Basel, aged 61.——Dr. **A. Pinto Nunes Cintra** of S. Paulo, Brazil.——Dr. **S. Federn,** Vienna.——Dr. **P. N. Castro,** a prominent physician of Buenos Aires, aged 63.——Dr. **Ruiz de Arteaga,** one of the founders of the *Revista Médica de Sevilla* but long residing in the Canary Islands.——Dr. **A. von Szily,** professor of ophthalmology at Budapest and author of several works on the optic nerve and other subjects in his specialty, aged 73.

Government Services

Exportation of Narcotics

Further hearings have been held by the Ways and Means Committee of the House of Representatives on the bill to forbid the exportation of opium and narcotics. Recent charges that narcotic drugs are being used in Cuba on a larger scale than ever were denied by the export manager of a large drug firm, who told the committee that personal investigations showed that there was no justification for the charge, and that, on the contrary, narcotics were shipped to Cuba under strict regulations and could not be exported from there to other countries.

Care of Neuropsychiatric Veterans

No part of the money so far appropriated by Congress for the care of disabled war veterans has been spent for hospitals for treatment of the insane, the House Commerce Committee was informed by Dr. Thomas W. Salmon, New York, adviser on mental diseases to the Rockefeller Foundation. The statement was made at a hearing on the Rogers bill to consolidate into one bureau the several government agencies now dealing with relief for former service men. As a result of this failure to provide proper facilities, veterans suffering from mental and nervous disorders are in many instances being committed to institutions in which criminal insane, drug addicts and vicious degenerates are segregated. One third of the former service men receiving treatment at government expense are neuropsychiatric cases, and 60 per cent. of these are insane. The Rogers bill, providing for consolidation in a new federal bureau of soldier rehabilitation in the Interior Department of functions now exercised by the War Risk Insurance Bureau, the Bureau of Public Health Service and the Federal Board for Vocational Education, is receiving strong support from officers of the American Legion.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 22, 1920.

Arsphenamin Fatalities

During the war a number of cases of fatal jaundice following the administration of arsphenamin occurred in military hospitals. This led to an investigation by the Medical Research Council. The suggestion was made by Prof. S. Macdonald that arsphenamin produced jaundice by rendering the tissues, particularly the liver, liable to bacterial invasion. Dr. Ainley Walker, lecturer on pathology in the University of Oxford, carried out a research for the council to determine whether arsphenamin or neo-arsphenamin has influence on the development and persistence of immunity in rabbits as measured by the agglutinins. The rabbits were immunized by intravenous injections of standard cultures of the enteric group, and the arsphenamin was given before injection, during the period of rapid rise of agglutinin, during the period of rapid fall and during the later period of expected gradual fall. Dr. Walker found that arsphenamin did not prevent response to infection as measured by agglutinin production. On the contrary, it appeared to induce fresh and sometimes prolonged activity in agglutinin production at a time when the response would otherwise be on the wane. His results are therefore opposed to the hypothesis that arsphenamin jaundice is due to infection. This is borne out by an investigation by Prof. H. M. Turnbull on the minute morbid changes in eight fatal cases. The liver was much more affected than the rest of the body by severe degenerative and necrotic changes. In only one case were bacteria found, and these were gram-positive bacilli with the appearance and distribution of the microbes often present in tissues that have not been removed and fixed without delay. The hepatic lesions differed from those produced by infection and resembled those induced by chemical poisons, such as phosphorus, trinitrotoluene and tetrachorethane. The problem still remains unsolved why arsphenamin administered according to rule to strong, young patients sometimes proves a virulent poison. It may be remembered that Ehrlich and his followers made exaggerated claims as to the efficiency of the preparation and persistently underrated its dangers. When fatalities occurred which obviously were due to arsenic poisoning they exhausted ingenuity in suggesting all sorts of causes, such as organic disease in the patient and errors of technic. All these explanations have been discredited. So also is this latest attempt to deny direct toxicity by suggesting an indirect effect of the toxic influence of the drug.

Dentistry for All

The socialistic legislation known as the insurance act was, as foretold in these columns, bound to lead to further socialistic measures. The latest, introduced at a time when the country is groaning under excessive taxation, is the dentists' bill, to be introduced next session by Dr. Addison, the minister of health. It proposes to supply, sooner or later, dental treatment to everybody, and to prohibit practice by any unregistered dentists. One estimate of the cost of the free treatment is $200,000,000. Other estimates take into consideration the possibility that the scheme will be introduced piecemeal and that payment will be demanded, thus diminishing the cost to the state. The prohibition of unregistered practice is to be accompanied by the immediate registration of the large army of unqualified dentists now practicing. This is necessary because they outnumber the qualified ones and there are not enough of the latter to go round. Already there are in existence at the cost of the state dental clinics

for schoolchildren, for expectant mothers and for the tuberculous. On medical grounds, no doubt, the legislation can be recommended; but the question becomes more serious every day, how much longer can the country bear the mountain of taxation which is being piled up, not to pay for the war, but, in spite of the war, to carry out all sorts of costly schemes?

A Regional Medical Staff for Panel Practice

A staff of physicians has been appointed to carry out important duties in connection with the work of the ministry of health, especially in relation to the insurance act. The object is to make available to panel physicians and to approved societies the services of medical officers of wide experience who will advise on questions of doubt as to incapacity for work, in cases in which incapacity is prolonged, when it is desirable to obtain a second medical opinion. The work will consist in examination of patients certified as incapable of work and reporting on them; consultation with insurance practitioners in cases in which the question of incapacity does not necessarily arise, and other duties in relation to panel physicians. The salary will be $5,000 a year. The government represents that this plan will benefit the taxpayer, by the saving in the payment of benefit for incapacity.

The Hospital Crisis

As stated in previous letters, the voluntary hospitals are in serious financial difficulties because of altered conditions brought about by the war. Their expenses are more than doubled as a result of the rise of prices. The excessive taxation and the fact that the state has undertaken in the insurance act the medical care of the working class have rendered the class which supports the hospitals by donations less able and less willing to do so. The British Medical Association summoned a meeting of the honorary staffs of the voluntary hospitals to consider the position. A resolution was moved that the voluntary system is to the advantage of the public, to medical science and to the medical profession. Only one delegate spoke against the motion, affirming that the voluntary system was more in keeping with mid-Victorian times than the present day, of which the characteristics were insurgent democracy and assertion of equality. Beds were provided only in the proportion of 1 to every thousand of the population, which was inadequate. The resolution was carried with only four dissentients. It was recommended that every inpatient who was not necessitous should make a weekly contribution toward the cost maintenance. It was resolved that when patients pay part or the whole of the hospital maintenance fees, either individually or by some contributory method, or with the addition of state aid, a percentage should be passed to a fund to be allocated as the honorary medical staff may determine. It was also resolved that greatly extended support should be sought for voluntary hospitals from employers and insurance companies, seeing that they benefit largely, both directly and indirectly, by the services of the hospitals.

The Influence of Dilution on the Toxicity of Alcohol

For the Central Control Board of Liquor Traffic, Dr. H. M. Vernon investigated this question. The quantities of alcohol consumed were not greater than 30 c.c., and dilutions of less than 5 per cent. were used. The ensuing impairment of muscular coordination was measured by a typewriting test, an adding machine or target pricking. Dr. Vernon himself took from 15 to 90 c.c. of alcohol three and one-half hours after food. With the larger doses the toxic effect increased at a more rapid rate. When taken as 20 per cent. whisky, 18.3 c.c. of alcohol was followed by an increase of 0.8 in the number of mistakes; 30 c.c. by 3.4; 45 c.c. by 8.0, and 60 c.c. by 17.0. A new fact of importance established is that the toxic effect of alcohol in considerable dilution is much less than was anticipated. Practically speaking, beer containing 3 per cent. by volume of alcohol is a nonintoxicating liquid. When taken in this form, 90 c.c. of alcohol produced only as much effect as 54 c.c. in the form of 4 per cent. beer, as 46 c.c. in the form of 5 per cent. beer, and as 42 c.c. in the form of 20 per cent. whisky. The 90 c.c. of alcohol mentioned is contained in 5¼ pints of 3 per cent. beer. Dr. Vernon calculates that more than 10 pints of beer, which would take him over four hours to drink, would be needed in order to intoxicate him. He draws the practical conclusion that in order to bring about an increase of sobriety in the nation the consumption of the stronger beers and of spirits ought to be discouraged, and consumption of the weaker beers and of cider to be stimulated. This object could be to some extent achieved by exaggerating the system of taxation already in force, and making the lighter beers much cheaper than the heavier. Dr. Vernon found that light claret containing 10 per cent. of alcohol taken with food had a slight toxic action, comparable with that of 3 per cent. beer taken on an empty stomach. Port or sherry imbibed under similar conditions was as a rule more toxic than 5 per cent. beer taken on an empty stomach. Claret had the same effect as whisky diluted to equal alcoholic strength.

PARIS

(From Our Regular Correspondent)

Dec. 10, 1920.

The Centenary of the Academy of Medicine

The 20th of December it will be a hundred years since an ordinance of King Louis XVIII established the Academy of Medicine, which was a fusion of two older societies, the Royal Academy of Surgery and the Royal Society of Medicine. The principal duties marked out for the Academy of Medicine by the terms of the establishing decree were: to reply to the questions of the government in regard to everything that pertains to public health and especially to epidemics, diseases peculiar to certain countries, epizootics, the various cases arising under medical jurisprudence, the propagation of vaccination, the examination of new and secret remedies internal and external, natural and artificial mineral waters, etc. The academy will celebrate its centenary by a succession of ceremonies extending over three days. The opening ceremony, to be presided over by the president of the republic, M. A. Millerand, will be held December 20, and will include the formal reception of foreign guests and the delivery of addresses by foreign visitors. Professor Laveran, president of the academy, and President Millerand will also deliver addresses. The second day three addresses will be given, the first by Dr. Vaillard on "The Rôle of the Academy in the Evolution of Public Hygiene from 1820 to 1920," the second by Dr. Camus on "Vaccination Against Smallpox in Relation to the Academy," and the third by Dr. Chauffard on "A Century of Medicine from the Academy Standpoint." The third day there will be four addresses: one by Professor Pinard on "A Century of Puericulture as the Academy May View It," another by Dr. Meillère on "A Century of Hydrology as Viewed by the Academy," a third by Dr. Delorme on "Surgery During the Period from 1820 to 1920 as Seen by the Academy," and the fourth by M. Hanriot on "The Benefactors of the Academy." On the evening of the third day there will be a banquet and a reception.

A League in the Interest of Mental Hygiene

A league in the interest of mental hygiene, called the Ligue de prophylaxie et d'hygiène mentales, has recently been founded. It has for its purpose the protection of psychopaths for whom there had been heretofore no special society. It may be found desirable to establish dispensaries which shall perform, in connection with mental diseases, the same services

that the public health dispensaries perform with respect to tuberculosis. The league will interest itself also in the campaign against tuberculosis, alcoholism and syphilis, all three of which produce criminal degenerates and mentally diseased subjects who are more or less incurable. The prophylactic care needed by weak and abnormal children, and the utilization of biologic tests in social questions will also come up for consideration.

Personal

J.-L. Breton, minister of public hygiene, has recently been elected a "free academician" of the Academy of Science. Breton is an engineer, formerly connected with the Collège de France. He has specialized in the study of industrial diseases, more especially those occurring in the white lead industry; also in the study of electricity and more particularly roentgen rays.

BERLIN

(From Our Regular Correspondent)

Dec. 18, 1920.

The Financial Need of German Students

Statistics gathered by a committee of the general student body on the social and financial condition of students in the University of Frankfort-on-the-Main furnish an insight into the financial need of German students, to which I referred in a former letter. Of 4,342 students in the University of Frankfort, 11.5 per cent. were receiving stipends, 5.2 per cent. had been exempted from the payment of fees, and of the 50 per cent. who live in Frankfort and vicinity two thirds were able to continue their studies only by reason of the fact that they were under no extra expense for board and lodging. The monthly allowances of the students were, for the most part, entirely insufficient. About 1 per cent. had less than 200 marks a month, 17 per cent. had from 200 to 350 marks; 35 per cent. from 350 to 500 marks, and 47 per cent. more than 500 marks. The average monthly amount at their disposal was 583 marks, or $8.16, reckoning the present low value of the mark (1.4 cents). Students under 25 years of age and those of the philosophical faculty seemed to be the worst off. These amounts are by no means equal to what is regarded as a minimum for a Frankfort student, which has been estimated by Dr. Elsas to be about 700 marks ($9.80). The monthly expenses of the students agreed, in a general way, with his estimate. Two per cent. expended from 200 to 350 marks, 20 per cent. from 350 to 500 marks, 25 per cent. from 500 to 600 marks, and 53 per cent. more than 600 marks. The higher amounts were expended chiefly by students 30 years of age. The students of medicine and science seemed to be the best situated financially. Not less than 73 per cent. of the students from outside Frankfort have found that they cannot with their present income meet their necessary expenses. The average difference between income and expenses was about 150 marks. Their financial need has induced many of the students to seek additional sources of income outside the university. Their efforts in this direction have not been very successful, partly owing to the lack of work and partly in consequence of the poor remuneration. Only 9 per cent. of the students have found it feasible to eke out their income in this manner. The financial condition of this portion of the student body was somewhat better than that of the other students, but by no means favorable. Their average income was 562 marks, whereas their expenses amounted to 647 marks, leaving an average deficit of 85 marks.

The Birth Rate and Infant Mortality Since the War

An article by Geheimrat Schlossmann on the birth rate and infant mortality since the war gives a more cheering aspect to the otherwise sad picture presented by the general political, social and industrial conditions in Germany. Schlossmann, a pediatrician who has been very active in the field of social hygiene and has met with pronounced success, reports on conditions in the government district of Düsseldorf. This district comprises about a tenth of the former kingdom of Prussia. It is his opinion, however, that the results of his statistics would apply to the whole state. Even before the war the birth rate in Germany had been gradually decreasing. In the district of Düsseldorf, during the period from 1901 to 1914, the decline had not been so marked. However, a decline from 39.52 to 28.26 per thousand had been recorded. Whereas the number of births (of living children) in this district in 1914 was 105,500, in 1915 the number had dropped to 81,000 and in 1917 reached the low figure of 52,000. In 1918 the number of births rose to 55,000 and in 1919 to more than 70,000, or a rate of 19.5 per thousand. This increase in the birth rate, which has come about in spite of the unfavorable political and industrial conditions, is no doubt rightly interpreted by Schlossmann as evidence of a decrease in attempts at birth control. In view of the conditions as they exist in this country at the present time these facts seem remarkable, although it has been the general experience that after the close of a war an increase in the birth rate may usually be noted. But still more remarkable than the increase in the birth rate is the decline in infant mortality since the war. Whereas the infant mortality during the period from 1901 to 1905 was 16.46 per cent.; in the period from 1906 to 1910, 14.40 per cent., and from 1911 to 1915, 13.25 per cent., in 1918 it was reduced to 12.1 per cent., and in 1919 to only 10.6 per cent. In one kreis or circle of the government district of Düsseldorf the infant mortality was reduced to even 7.3 per cent. Considering these statements in connection with the already cited figures on the recent birth rate, we are confronted with the unusual fact that the great increase in the birth rate has not been accompanied by an increase in the mortality rate but, on the contrary, by a notable decrease. Schlossmann thinks this striking phenomenon is due partly to the cool summer of 1919 and partly to the mode of infant feeding practiced. The lack of cow's milk and the poor quality of commercial milk induced German mothers to nurse their infants longer and more liberally than formerly. At the same time, the overfeeding of infants, which we have come to recognize more and more as a frequent cause of nutritional disturbances in infants, and even of many deaths, has become less common on account of the lack of milk in general. The summer peak of infant mortality, for this reason, did not make its appearance in the summer of 1919 in the district of Düsseldorf. However, a winter peak was noted in place of it, doubtless due, in the opinion of Schlossmann, mainly to the influenza epidemic, but also to the lack of coal and a resultant lack of protection of infants against the cold. The latter explanation finds support in the fact that the greatest number of infants died during the first month of their existence; namely, 43 per cent., as compared with 7 per cent. during the third month. From his observations as a whole, Schlossmann concludes that work in social hygiene is of great value in preventing infant mortality. In his opinion it is quite feasible to reduce infant mortality to 5 per cent. (which is the goal he set many years ago), if for every 20,000 inhabitants a physician well trained in social hygiene could be provided, and if every 10,000 inhabitants could be given a thoroughly trained child welfare nurse. The aforementioned kreis, which in 1919 reduced its infant mortality to 7.3 per cent., was well equipped in the manner indicated.

The assumption that the conditions observed by Schlossmann in his district may be found also in other parts of Germany is borne out by an inquiry into the facts. From Munich it is reported that during the first six months of 1920 the number of births (106,000) was almost double that of 1919 (59,000) during the same length of time.

Marriages

GRANT J. POLLARD, Oriskany Falls, N. Y., to Miss Claribel Peck of Waterville, N. Y., at Syracuse, N. Y., December 20.

JAMES YATES HAMERICK, Boiling Springs, N. C., to Miss Marjorie Pierce of Whiteville, N. C., December 14.

WYATT SANFORD ROBERTS, Birmingham, Ala., to Miss Mary Lucy Dempsy of Indianapolis, December 29.

FRANK GILBERT STROUD, Moorestown, N. J., to Mrs. Emma Franklin Briggs of Brooklyn, December 29.

JAMES CALHOUN MCDOUGALL to Miss Josephine Stoney, both of Atlanta, Ga., December 29.

CHARLES HENRY SWIFT to Miss Juliana Streid, both of Washington, Ill., December 25.

HUGO MUENCH to Miss Helen Ruth Harrison, both of Carthage, Mo., December 28.

JOSEPH HOROWITZ, Brooklyn, to Miss Martha Goldstein of New York, December 19.

NOAH ADAIR to Miss Nellie Jordan, both of Etna Green, Ind., November 22.

Deaths

Horace Furness Taylor ✠ Ridley Park, Pa.; University of Pennsylvania, Philadelphia, 1903; aged 39; founder of the Taylor Hospital, Ridley Park; at one time coroner of Delaware County; president of the local board of health and medical inspector of schools; died, December 27, from pneumonia.

Louis Jacobs, New York; College of Physicians and Surgeons in the City of New York, 1904; aged 40; chief of the ear, nose and throat department of the Mount Sinai Dispensary; assistant laryngologist to the Montefiore Home and Bedford Sanatorium; died, December 30.

Joseph J. Houwink ✠ St. Louis; University of Amsterdam, 1900; St. Louis University School of Medicine, 1903; aged 46; instructor of dermatology at St. Louis University, and assistant professor of dermatology at the University of Missouri; died suddenly, December 22.

Ambrose McCoy ✠ Jackson, Tenn.; University of Louisville, Ky., 1880; Jefferson Medical College, 1888; aged 62; local surgeon for the Illinois Central Railroad; president of the State Board of Medical Examiners; died, December 26.

Howard Edwin Settle ✠ Boston; Harvard University Medical School, 1916; aged 29; assistant surgeon, U. S. P. H. S.; died in the Parker Hill Hospital, Brookline, Mass., December 20, following an operation for appendicitis.

Samuel Robert Johnson, Acting Asst. Surg., U. S. P. H. S., Denver; University Medical College of Kansas City, 1884; aged 56; major, M. C., U. S. Army, and discharged, Dec. 27, 1918; died, December 6.

William Abraham Dawson Montgomery, Chicago; University of Toronto, Ont., 1881; aged 60; for twenty years a member of the staff of Passavant Hospital, Chicago; died, January 1, from heart disease.

John Lehman Smith, Nashville, Tenn.; Vanderbilt University, Nashville, Tenn., 1920; aged 23; an intern in the Woman's General Hospital, Nashville; died in that institution, December 22.

John Thomas Shultz, Steubenville, Ohio; Cincinnati College of Medicine and Surgery, 1876; aged 69; died in the Ohio Valley Hospital, Steubenville, December 22, from septicemia.

John Clifton Bird, Danville, Ill.; University Medical College, Kansas City, Mo., 1900; aged 52; chief surgeon of the National Soldiers' Home, Danville; died, December 23, from nephritis.

Frederick C. Eckelman, Elkhart, Ind.; Pennsylvania Medical College, Philadelphia, 1860; aged 84; a practitioner of Elkhart for half a century; also a druggist; died, December 20.

James R. S. Pitts, Waynesboro, Miss. (license, Mississippi, 1882); aged 67; at one time a member of the state legislature; for many years postmaster of Waynesboro; died, December 22.

✠ Indicates "Fellow" of the American Medical Association.

Wilhelm D. Frenz, Chicago; Chicago Medical College, 1896; aged 62; a member of the Illinois State Medical Society; died, December 9, from carcinoma of the bladder.

Clark Smith, Berkeley, Calif.; Texas Medical College and Hospital, Galveston, 1881; aged 77; at one time a medical missionary in Africa; died, December 3, from heart disease.

Alexander Lovette Walker, Estill Springs, Tenn.; University of Tennessee, Memphis, 1903; aged 42; a member of the Tennessee State Medical Association; died, December 19.

George W. Brown, Frankfort, Ind.; Rush Medical College, 1866; aged 77; a member of the Indiana State Medical Association; a veteran of the Civil War; died, December 16.

William N. Horne, Anderson, Ind.; Medical College of Ohio, Cincinnati, 1877; aged 67; for four years city and county health officer; died, December 21, from anemia.

Samuel Eugene Shelton, Waco, Texas; University of the City of New York, 1873; aged 69; a member of the State Medical Association of Texas; died, December 20.

Morris Joseph Gelb, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1897; aged 45; died, December 28, from injuries received in a street car accident.

George Leander Starr, Hudson, Ohio; Bellevue Hospital Medical College, 1865; aged 87; at one time a member of the State Board of Health; died, December 20.

Cyrenius William Sillin, Stuttgart, Ark.; Medical College of Ohio, Cincinnati, 1889; aged 63; a member of the Arkansas Medical Society; died, December 18.

George F. C. Yost, Rivesville, W. Va. (license, West Virginia, 1904); aged 44; died, October 23, from injuries received in an automobile accident.

Alfred Louis Arner, New York; Bellevue Hospital Medical College, 1888; aged 72; at one time health officer of Jefferson, Ohio; died, December 10.

David W. Wilkins, Chicago; Hahnemann Medical College and Hospital, Chicago, 1897; aged 54; died, January 1, from pernicious anemia.

Herman Hellenstein ✠ New York; University of Buffalo, 1890; aged 58; coroner of Manhattan from 1909 to 1917; died, December 20.

Andrew O. Conrad, Glendale, Calif.; California Medical College, Oakland, 1892; aged 52; died, December 25, from carcinoma.

Eugene F. McLaughlin, Chicago; Bellevue Hospital Medical College, 1885; aged 60; died, December 26, from myocarditis.

Roscoe E. Freeman, San Jose, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1886; died, December 26.

Charles Henry Lards, Adrian, Mich.; Hahnemann Medical College and Hospital, Chicago, 1878; aged 76; died, December 22.

Frederick E. Bowlby, Medical Lake, Wash.; University of the City of New York, 1893; aged 53; died, December 9.

D. M. Jones, Albany and Portland, Ore.; Willamette University, Salem, Ore., 1867; aged 83; died, December 6.

Gottlieb Charles H. Meier, New York; University of the City of New York, 1880; aged 68; died, November 11.

William Dexter Swain, Copake, N. Y.; Albany (N. Y.) Medical College, 1867; aged 93; died, November 10.

Montgomery W. Glass, Beech Bottom, W. Va.; Jefferson Medical College, 1878; aged 66; died, December 17.

John Davis, Baltimore; University of Maryland, Baltimore, 1887; aged 63; died, December 14, from paralysis.

Robert Hiram Townsley, Wagner, S. D.; McGill University, Montreal, 1903; aged 40; died, December 9.

Elliott Daniel Robbins ✠ Boston; Harvard University Medical School, 1879; aged 64; died, December 13.

James Clancy McElroy, Pittsburgh; Bellevue Hospital Medical College, 1891; died, December 20.

John Irving Fort, Dallas, Texas; University of Louisville, Ky., 1881; aged 69; died, December 15.

William S. Bellwood, Abingdon, Ill.; Rush Medical College, 1895; aged 54; died, December 14.

Lawrence D. Wilson, Gary Ind. (license, Indiana, 1901); aged 64; died, December 22.

Charles E. Dunn, Shelbyville, Ind. (license, Indiana, 1897); aged 57; died, December 16.

John F. Brydon, Griffin, Ind. (license, Indiana, 1897); aged 77; died, December 12.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

TONA-VIN

Another Oasis in the National Desert

Last October the National Vigilance Committee of the Associated Advertising Clubs of the World asked for information "concerning a tonic by the name of 'Tona Vin' manufactured for the Thomas Chemical Co., Pittsburgh, Pa." THE JOURNAL had no information about either the product or the company that was alleged to put it out, but started to investigate. First an attempt was made to find out something about the Thomas Chemical Co. of Pittsburgh, but without immediate results. No street address was given for the company, nor did the concern's name appear in the Pittsburgh telephone or the Pittsburgh city directory. Inquiries addressed to chemical circles elicited the reply "not known."

Then came another letter from the New York headquarters of the Associated Advertising Clubs stating that one of their component branches had furnished them with a sample bottle of this "tonic" and also with some of the advertising that was being used and that these were being sent to THE JOURNAL

Greatest Offer Ever Made to All Who Are Sick or Ailing

50,000 Free Trial Bottles of TONA-VIN, the Wonderful Body Strengthener, Stomach Settler, Appetizer and Liver Regulator—Puts Dash and Go Into Tired, Weary, Sick and Run-down Men and Women.

These Bottles Are Given Away to Prove the Remarkable Tonic Effect of This Famous Medicine

If You Are Sick

HOSTS OF PEOPLE WHO WERE SICK DECLARE TONA VIN THE WORLD'S GREATEST TONIC

People From Every Part of the World Have Tested TONA VIN and Find It Unequaled in Its Remarkable Tonic Effect On Stomach, Liver, Kidneys and Bowels

No More Weak Stomached and Weak Livered People

Nothing Else Like TONA-VIN

TONA-VIN Makes You Want to Expand Your Lungs and Breathe Deep

Don't Wait

Use This Coupon Today

Present This Tona Vin Coupon at Any Drug Store in Toledo for One Trial Bottle of TONA-VIN

A greatly reduced reproduction of one of the full page newspaper advertisements of "Tona-Vin." The original was nearly two feet high and one and a half feet wide. Such advertisements furnish the point of contact between seller and buyer; the "free sample" may be counted on to do the rest.

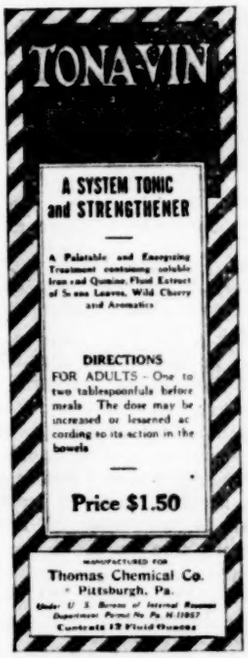
office. The advertisement reached us before the specimen. It was a full page affair from a Toledo, Ohio, newspaper notifying the people of that city that "50,000 free bottles of Tona-Vin" would be "given away to prove the remarkable tonic effect of this famous medicine." To those familiar with nostrum advertising the advertisement made it fairly easy to classify the product, and the National Vigilance Committee was notified that in all probability Tona-Vin was another of the alcoholic nostrums that are being born over night in order to meet—or beat—the exigencies of the prohibition law.

A little later the specimen bottle of Tona-Vin arrived. It was one of the "free trial" bottles and held one ounce of the preparation. The main label described "Tona-Vin" as "The Iron Tonic" and:

"A System Tonic and Strengthener."
"A Palatable and Energizing Treatment containing soluble Iron and Quinine, Fluid Extract of Senna Leaves, Wild Cherry and Aromatics."

The label also admitted the presence of 18 per cent. of alcohol. The directions (for adults) called for "One to two tablespoonfuls before meals" and added that the "dose may be *increased or lessened* [italics ours] according to its action in the bowels." The lower part of the label bore this statement:

"Manufactured For Thomas Chemical Co. Under U. S. Bureau of Internal Revenue Department Permit No. Pa. H-11057."


TONA-VIN
A SYSTEM TONIC and STRENGTHENER
A Palatable and Energizing Treatment containing soluble Iron and Quinine, Fluid Extract of Senna Leaves, Wild Cherry and Aromatics
DIRECTIONS
FOR ADULTS - One to two tablespoonfuls before meals. The dose may be increased or lessened according to its action in the bowels
Price $1.50
MANUFACTURED FOR
Thomas Chemical Co.
Pittsburgh, Pa.
Under U. S. Bureau of Internal Revenue Department Permit No. Pa. H-11057
Contents 12 Fluid Ounces

Reproduction (greatly reduced) of the main label of "Tona-Vin."

On the reverse side of this free trial bottle was a small label (reproduced with this article) reading:

"We hereby certify that this product was made under our supervision and complies with the provisions of the National Prohibition Act and the Regulations of the Prohibition Commissioners. AMERICAN STANDARDIZING BUREAUS, Washington, D. C.

"CAUTION—This preparation has been made with non-beverage alcohol and the sale or use thereof for beverage purposes will render the vendor or user liable to severe penalties."

Of the "American Standardizing Bureaus" more later. The liquid in the "free trial bottle" tasted like wine with a dash of wild cherry and just a suspicion of bitters. As evidently it had all the necessary elements of a good "repeater" it was decided that the A. M. A. Chemical Laboratory should find out more about the stuff. An attempt was made to purchase some in Chicago but without success. Possibly while "Hostetter's Bitters," "Lash's Bitters," numerous brands of "Wine of Pepsin" and a whole host of fly-by-night "medicines" containing alcohol in quantities of from 20 to 42 per cent. continue to be openly on sale in Chicago, it will not be commercially profitable to try to introduce a new alcoholic nostrum in this market. So the Associated Advertising Clubs of the World were again appealed to. They, in turn, took it up with their original correspondent, the Better Business Commission ("Vigilance Committee") of the Toledo Advertising Club and from Toledo some bottles of Tona-Vin in their unopened, original packages were shipped to THE JOURNAL office. The Better Business Commission of Toledo also sent two typical full page advertisements from local newspapers, one of which is reproduced in miniature with this article.

The Association's chemists examined Tona-Vin and have reported:

CHEMISTS' REPORT

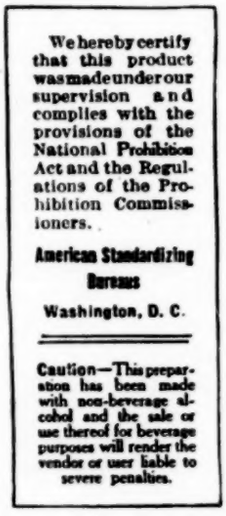
"Tona-Vin is a dark-brownish liquid, having an odor like wild cherry and wine, and a slightly bitter, somewhat sour taste. The label states that the preparation contains 'soluble iron and quinin, fluid extract of senna leaves, wild cherry and aromatics'. The presence of 18 per cent. of alcohol is admitted. The package contains slightly less than 11 fluid ounces, although the label declares the contents to be 12 fluid ounces. As a matter of fact the Tona-Vin bottles will not hold 12 fluid ounces.

"Tona-Vin is acid to litmus. On evaporation, the preparation gave 11.42 gm. of residue per 100 c.c. Phenolphthalein, bromids, iodids, and the purgative salts, such as magnesium sulphate and sodium phosphate were absent. Alkaloids, iron and extractives from an emodin-bearing drug were found, the latter in noticeable amounts.

"The total alkaloids amounted to 0.0222 gm. per 100 c.c., or about 1/10 gr., per fluid ounce. The alkaloids appeared to consist chiefly of quinin. Although the circular which accompanies the trade package of Tona-Vin states that nux vomica is one of the ingredients of the preparation, no mention of this drug is made on the label and tests for strychnin and brucin (normal constituents of nux vomica) were negative. The U. S. P. "tonic dose" of quinin is 1½ grains; hence a dose of Tona-Vin (1 fluid ounce) contains about 1/15 of a dose of quinin, and to obtain a tonic dose of this drug, the individual would be required to drink the contents of about 1.4 bottles of the preparation. This is equivalent in alcoholic content to about 7.4 fluid ounces of whisky. The absence in Tona-Vin of quinin in therapeutically effective quantities is demonstrated by the fact that the preparation is only very slightly bitter.

"Iron was determined, the amount found corresponding to the equivalent of 0.02 gm. of metallic iron per 100 c.c., or about 9/100 grain per fluid ounce. The U. S. P. dose of reduced iron is 1 grain; hence a dose of Tona-Vin contains 1/11 of a dose of iron and, to obtain an average dose of this drug, the individual would be obliged to drink the contents of an entire bottle of Tona-Vin. One fluid ounce (one dose) of Tona-Vin was dealcohlized by evaporation and the residue swallowed by a healthy man. No effect except a doubtfully laxative action resulted. This test, in conjunction with the chemical examination, indicates that Tona-Vin is not sufficiently medicated to prevent its use in moderate amounts as a beverage."

The gist of the chemists' report lies in the closing sentence. There is, of course, no legitimate reason for administering such drugs as iron, quinin and senna in ridiculously small doses in a menstruum containing 18 per cent. of alcohol. Any of these three drugs can be administered in tablet form. Their sale in the form of Tona-Vin simply gives one more loophole to evade the regulations of the national prohibition law.


We hereby certify that this product was made under our supervision and complies with the provisions of the National Prohibition Act and the Regulations of the Prohibition Commissioners.
American Standardizing Bureaus
Washington, D. C.
Caution—This preparation has been made with non-beverage alcohol and the sale or use thereof for beverage purposes will render the vendor or user liable to severe penalties.

Reproduction (full size) of the "certificate" that appears on the "free trial bottles" of "Tona-Vin." The "American Standardizing Bureaus" has nothing to do with the government. It is a private concern, one of whose functions seems to be the devising of "formulas." It also sees to it that in the marketing of such products the letter of the law is observed.

THE THOMAS CHEMICAL COMPANY

There were still three points regarding the exploitation of Tona-Vin that needed clearing up. First: Who and what is the Thomas Chemical Co., under whose name the stuff is sold? We are advised that the Tona-Vin advertisements have been placed by the Charles H. Fuller Co., a Chicago advertising agency, and that the newspapers that carried the advertisements were instructed to send copies of the issues containing the advertisements to W. & H. Walker, Inc., Pittsburgh, Pa. The Walker concern is listed as a manufacturer of soap and toilet articles. The Thomas Chemical Co. on its letterheads describes its business as "Flavoring Extracts, U. S. P. Preparations and Proprietary Medicines." Just why a manufacturer of soap and toilet articles should create a subsidiary company to exploit an alcoholic "patent medicine" we will leave for it to explain.

THE AMERICAN STANDARDIZING BUREAUS

Another point of interest was the "American Standardizing Bureaus" of Washington, D. C., whose "certificate," that Tona-Vin was made under their supervision, appears on the "free trial" bottles. The American Standardizing Bureaus, in spite of its name and the fact that it is at Washington, has nothing to do with the government; it is purely a private organization. It occupies three rooms on the fifth floor of an office building. We are advised that it is a partnership affair and to its chief owner, it is alleged, belongs the distinguished honor of outlining the formula for this "Wonderful Body Strengthener. Stomach Settler, Appetizer and Liver Regulator." It seems that the American Standardizing Bureaus have one of their employees at the Walker headquarters supervising the preparation of Tona-Vin and that it is the business of the "bureaus" to see that care is taken that all legal and regulatory restrictions are observed.

GETTING AN OFFICIAL O.K.

Finally: the full size of Tona-Vin bears this statement at the head of the secondary label on the bottle:

"Formula Approved by the United States Bureau of Internal Revenue, April 29, 1920, Serial No. of Permit Pa. H-11057."

In view of this a letter was written to the Chief of the Bureau of Internal Revenue at Washington, apprising him of the results of the investigation of the A. M. A. Chemical Laboratory and of the claims made for Tona-Vin. Then this question was asked:

> "If it is not against the policy or rules of the Bureau, will you let us know, first, whether the permit was issued to the Thomas Chemical Co. as such, or to some other concern that stood sponsor for the Thomas Chemical Co., and, second, whether in issuing these permits any investigation is made of the bona fides of the company or concern to whom such permits are issued."

In reply, a courteous letter was received from Assistant Prohibition Commissioner, D. S. Bliss, stating that "Tona-Vin" was manufactured under permit issued to W. & H. Walker, Pittsburgh, Pa. The reply continued:

> "In answer to your second question as to whether or not investigation is made of the bona fide character of the company to whom such permits are issued, you are informed that each State Prohibition Director is supposed to make a thorough investigation before approving an application for a permit under the Volstead Act. If you wish to file a complaint against the manufacture and sale of this preparation, as being in violation of the Volstead Act, the office would appreciate the same."

Here, then, we have the whole business. A concern whose business is the marketing of soaps and toilet articles goes into the manufacture of a nostrum whose chief and most potent ingredient is alcohol—this, too, at a time when the use of alcohol as a beverage has been prohibited by the Constitution of the United States and by special legislation of Congress. This nostrum seems to have been devised presumably at the request of the company that manufactures it and makes money out of it and doubtless for a handsome consideration, by men of supposed professional standing. The "formula" thus evolved is given an official O. K. by the state prohibition director and the stuff is put on the market. Certain newspapers sell whole pages to the nostrum manufacturer in order to acquaint the public with this new "tonic" which "Puts Dash and Go into Tired, Weary, Sick and Run-down Men and Women." Thousands of bottles of the stuff are given away in order to acquaint the public with its "virtues."

A beautiful business; and all perfectly legal!

Correspondence

"EAR TESTS FOR AVIATORS"

To the Editor:—A recent editorial with this title (The Journal, Nov. 27, 1920, p. 1502) relative to the value of vestibular tests in aviation seems to merit a reply. I was executive officer of the Medical Research Board, Air Service, from its inception, in September, 1917, to my discharge, in February, 1919. It was partly my job to direct the activities of the laboratory so as to produce results valuable from a military point of view. In its beginning, the board did not know all the causes of inefficiency in fliers: no one knew them, but much had been developed by the standing board of the British Air Medical Service. Such men as Dryer, Flack, Birley and others, up to the beginning of the board's existence, had developed sufficient knowledge to show conclusively that the greatest cause of disaster in the air lay in the pilot himself. Therefore, the study of the physiology

of altitude, its effects on man and the results of this peculiar physiologic alteration on mental processes was the first work taken up by our board. While many reports of investigative work had been received from England, they were not in such form as to enable definite conclusions to be drawn. There was great variability of opinion, except in one direction—that altitude produced decided physical and mental inefficiency.

The Medical Research Board studied first the effects of altitude from the standpoint of physiologic, psychologic, ophthalmologic and cardiovascular effects. The beginning was made in the American University at Washington. Until the completion of quarters on Hazelhurst Field, Mineola, L. I., research could not be carried out on aviators because of their being unavailable. Studies were made, however, on what might be considered the average normal man, and these studies were the basis for those to be made on aviation fields. By the time of the advent of the board on the aviation field in January, 1918, well defined plans for the investigation of the men who were actually flying had been developed. Very little deviation from these plans has ever been made. One fact has been clearly demonstrated by the aviation research: that the marked alteration of environment in the air produces marked compensatory changes—physiologic, cardiovascular, psychologic—in fact, all the processes of the individual show greater or less reaction, according to the individual. And this is the keynote to the situation; for if every individual reacted alike, a set formula could predict what should and what should not be done.

I do not suppose that any one will deny the existence of the vestibular apparatus. Admitting its presence, what is it for? Motion perception; and, if motion perception, wherein lies its value to aviation? In this: that motion perception, being independent of vision or hearing, serves to conserve and guide motor coordination more nearly automatically than vision or hearing, because of its integral mechanism's being part of the great automatic coordinating governor of movements of man—the cerebellum.

We cannot logically reason otherwise, if we believe in anatomic physiologic function.

If we do believe, then we must admit that any great variation from the normal exhibition of function by any given vestibular apparatus must affect the ability of that man to execute those fine, automatic, coordinate movements that constitute what the flier calls "the feel of the ship," and the whole tendency of the study of the flier from the otologic standpoint goes to prove that this is so. This is particularly so in those showing hypersensitiveness to motion.

In the tabulation of more than 50,000 examinations for the aviation service, certain definite figures result concerning the effects produced by vestibular stimulation. These may be represented by the nystagmus time of 23 seconds; vertigo, 17-19 seconds, and past pointing, three times. These figures may represent the norm for vestibular reaction.

In the investigation of the Medical Research Board in the American Expeditionary Forces (Aviation Medicine in the A. E. F., U. S. Govt. Pub., 1920), intensive study of the rôle of the labyrinth was made by the late Lieut.-Col. Henry Horn, M. C. I feel that Horn's conclusions should be given in full, in that his opinion expressed therein seems to be the safest guide we have, so far, in this question, but which gives to the labyrinth a distinctive part in the composite needful to define the individual who may make a successful flyer—that is, a normal man.

Horn's conclusions, based on a study of 786 cases, are as follows:

1. In conclusion, it might be said that the statistics for this paper were worked up with great care and exactness. . . . As a result of continuous air work . . . the labyrinth reactions are not changed in any essential particular.

2. Among the select and successful, the hypersensitive to motion types are few and far between.

3. Many typical hypersensitive to motion types can accommodate themselves to this handicap and become successful.

4. A very considerable per cent. . . . are not able to overcome the handicap and are dropped by the roadside.

5. Given an intact and well balanced labyrinth, there is nothing to indicate that the lower nystagmus limit is of consequence, even as far down as 13 seconds.

6. The normal labyrinth findings, as previously determined, are substantiated by our studies.

7. Special care should be exercised in allowing candidates with a hypersensitive to motion history and nystagmus around 30-35 seconds, to enter the service. Thirty-five seconds is the extreme margin of safety.

8. One can exceptionally overcome almost any handicap of hypersensitiveness to motion, *but why risk it?*

Your editorial states that "the opinion of English authorities is given by H. Graeme Anderson." This is not wholly correct. The opinions given were Anderson's, but not all the English authorities agreed with him. Dryer expressed his opinion to the contrary to me, personally, when Anderson's article appeared here in the States.

Is it not better to accept as our standard those evidences of physiologic reaction which indicate the normal? We have the figures which denote the normal. Why not accept them? As Horn tritely says: "One can exceptionally overcome almost any handicap . . . but why risk it?"

E. G. SEIBERT, M.D., Washington, D. C.

"THE PASSING OF THE INTERDEPARTMENTAL SOCIAL HYGIENE BOARD"

To the Editor:—I desire to commend THE JOURNAL on the editorial comment entitled "The Passing of the Interdepartmental Social Hygiene Board" (THE JOURNAL, Jan. 8, 1921, p. 117). When Congress began consideration of the appropriation under the Sundry-Civil Bill, a letter went forward from this bureau to the delegation in Congress from Nebraska discussing the various activities carried on for venereal disease control and asking its support along the lines as suggested in your comment.

I. H. DILLON, M.D., Lincoln, Neb.
Chief, Nebraska Bureau of Health.

"THE QUESTION OF POSITIVE WASSERMANN REACTIONS CAUSED BY THE INTRAVENOUS ADMINISTRATION OF ARSPHENAMIN"

To the Editor:—In connection with the article by Strickler, Munson and Sidlick (THE JOURNAL, Nov. 27, 1920, p. 1438) and the communication from Kolmer (Dec. 25, 1920, p. 1796), a French contribution may be studied with profit. Widal, Abrami and Iancovesco (*Presse médicale* **28**:893 [Dec. 11] 1920), though not aiming to explain the Wassermann reaction, and, in fact, not even mentioning it, shed much light on it. In presenting a functional test of the liver, they furnish experimental proof that, when the liver structure is damaged, or its function disturbed, its proteopexic ability is abolished, and albuminous substances passing through undamaged produce, in the general circulation, hemolysis. This is caused by many diseases, mostly febrile, and by different chemicals. One of them is arsphenamin, producing arsenical hepatism, sometimes severe, with icterus, but usually mild, though sufficient or severe enough to disturb the proteopexic function of the organ and cause hemoclasis or hemolysis.

This article and the one by Henes ("Cholesterinemia and the Wassermann Reaction," *American Journal of Syphilis* **4**:685 [Oct.] 1920) both hit the nail on the head. It seems to me that today, concerning the Wassermann reaction, we

are in the same condition as was the world before Pasteur studied fermentation, and therefore every scientific source of information should be exhaustively explored. "Nul effort n'est perdu," as Pasteur used to say.

GEORGE M. KATSAINOS, M.D., Boston.

To the Editor:—Referring to the recent paper by Strickler, Munson and Sidlick, as well as Kolmer's comments, it may be of interest to recall some work along similar lines which has been done by Ravaut:

> In fourteen patients observed under similar conditions, and affected with various disorders, but with no antecedents or stigmas of syphilis, the Wassermann reaction became positive following treatment with neoarsphenamin in five of them, or in 35 per cent. of the cases. It seems to me difficult to say that these were examples of ignored syphilis, brought to light by arsenical treatment, for the reactions, which varied in intensity, were transitory in most of them. It is nevertheless true that if we admit the absolute value of the Wassermann reaction, it becomes necessary to regard these patients as syphilitic, which seems to us inadmissible.

The disorders in the five patients who reacted were: angiolupoid plus papulonecrotic tuberculid; lupus erythematosus; generalized lichen planus; psoriasis, and lichen planus. The nonresponsive cases were classified as: lichen scrofulosus, two cases; erythema induratum, two cases, and lichen planus, five cases.

B. BARKER BEESON, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

SUGAR OF THE SUGAR PINE

To the Editor:—I have been referred to you by the Department of Agriculture in regard to the sugar of the sugar pine. The sugar I speak of is *not* that of the Douglas fir but of the *sugar pine*. It is used a great deal by the Indians as a medicine. We would appreciate it a great deal if you would tell us whether there is a market for it and if so where.

N. I. H., Strawberry Valley, Yuba County, Calif.

ANSWER.—The California sugar pine (*Pinus lambertiana*) yields a sweet exudate which has been called American manna. It is said to possess laxative properties. American manna was investigated by Berthelot and his pupils in 1855 (*Compt. rend. Acad. d. sc.* **41**:392, 1855), the principle imparting the sweet taste isolated, and by them called pinite. Although not fermentable by yeast it was classed among the sugars for a long time. In 1891 the exudate of the sugar pine was investigated as a possible source of sugar by Dr. H. W. Wiley, for many years chief chemist of the Bureau of Chemistry of the United States Department of Agriculture. The sweet principle was found to be a hexahydric phenol, a methyl derivative of inosite (*J. Am. Chem. Soc.* **13**:228, 1891). American manna is not used in medicine; consequently there is no market for it.

DIPHTHERIA TOXIN-ANTITOXIN AS PROPHYLACTIC

To the Editor:—An extensive advertising campaign is being made here for the use of diphtheria toxin-antitoxin mixtures, the literature stating that three years' immunity at least is proved to follow their use. I should like to know whether reliable authorities agree substantially with these claims.

MALCOLM MACKAY, M.D., Sherbrooke, Que.

ANSWER.—Apparently those who have given a thorough trial to the use of diphtheria toxin-antitoxin mixtures for immunizing purposes have been favorably impressed by the results. The most extensive observations in this country, made by Park and Zingher of New York, have extended over several years. They are enthusiastic advocates of the practice. So far as we are aware, no unfavorable results have been reported, with the exception of some accidents occurring in a series in Texas. Then an improper mixture was employed, and the bad results should not be credited against the method.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 1. Sec., Dr. Harry C. Vighne, Juneau.

CALIFORNIA: Los Angeles, Feb. 14-17. Sec., Dr. Charles B. Pinkham, 127 Butler Bldg., San Francisco.

KANSAS: Topeka, Feb. 8. Sec., Dr. Henry A. Dykes, Lebanon.

MISSOURI: St. Louis, Jan. 18-20. Sec., Dr. George H. Jones, Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS, St. Paul, Minneapolis and Rochester, Minn., Feb. 23-March 2. Sec., Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

NEW YORK: New York City, Albany, Syracuse and Buffalo, Jan. 24-27. Asst., Professional Examinations, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

SOUTH DAKOTA: Pierre, Jan. 18. Director, Division of Medical Licensure, Dr. H. R. Kenaston, Bonesteel.

VERMONT: Burlington, Feb. 8-10. Sec., Dr. W. Scott Nay, Underhill.

WYOMING: Cheyenne, Feb. 7-9. Sec., Dr. J. D. Shingle, Cheyenne.

Rhode Island July Examination

Dr. Byron U. Richards, secretary, Rhode Island State Board of Health, reports the written and practical examination held at Providence, July 1-2, 1920. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Of the eleven candidates examined, 10 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Boston		(1910)	89.7
Medical School of Harvard University	(1919) 93.7, (1920) 89.1.	(1892)	90.3,
Tufts College Medical School	(1918) 89.5, (1919) 87.8, 88.4, 87.9.	(1917)	82.5,
University of Naples		(1899)*	80.5
	FAILED		
Laval University Faculty of Medicine		(1919)	71

*Graduation not verified.

West Virginia July Examination

Dr. S. L. Jepson, health commissioner, West Virginia Public Health Council, reports the oral, written and practical examination held at Charleston, July 13, 1920. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Of the 29 candidates examined, 23 passed and 6, including 1 osteopath, failed. Twenty-nine candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University School of Medicine		(1917)	88.1
University of Louisville Medical Department		(1920)	87.4
University of Maryland Coll. of Phys. and Surgs.	89.5, (1920) 86.8, 88.4, 88.6	(1919)	86.1,
University of Michigan Medical School		(1920)	88.5
Washington University Medical School		(1919)	85.9
Jefferson Medical College	(1919) 88.4,	(1920)	94.1
University of Cincinnati College of Medicine		(1919)	80.8
University of Pennsylvania School of Medicine		(1920)	89.9, 91
Univ. of Pittsburgh School of Medicine	(1917) 90.3,	(1919)	88.7
Lincoln Memorial University		(1916)	82.9, 84.1
Meharry Medical College		(1913)	81.6
Med. College of Virginia	(1917) 80.2, 86.8,	(1920)	83.7
University of Virginia Department of Medicine		(1916)	86.2
	FAILED		
Chattanooga Medical College		(1904)	65.3
Meharry Medical College	(1918) 70.2, (1919) 72.1,	(1920)	75.5
Memphis Hospital Medical College		(1912)	75.5

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University		(1905)	Dist. Colum.
Atlanta School of Medicine		(1913)	Mississippi
Rush Medical College		(1918)	Illinois
Univ. of Louisville Med. Dept		(1918), (1916)	Kentucky
Chicago College of Medicine and Surgery		(1914)	Illinois
Tulane University		(1908)	Louisiana
Baltimore Medical College		(1913)	Maryland
Johns Hopkins University		(1915)	Maryland
Univ. of Md. Coll. of P. and S.		(1913)	Maryland
Coll. of Phys. and Surgs., Baltimore		(1907) Penn., (1915)	N. Carolina
Boston University School of Medicine		(1914)	Virginia
University Medical College of Kansas City		(1901)	Kentucky
Leonard Medical School		(1909)	Virginia
Eclectic Medical College		(1919)	Ohio
University of Cincinnati College of Medicine		(1914)	Kentucky
University of Wooster Medical Department		(1875)	Ohio
Jefferson Medical College		(1917)	Penna.
Medico-Chirurgical College of Pennsylvania		(1912)	Ohio
Medical College of the State of S. C.		(1905) (1915)	S. Carolina

University of Tennessee College of Medicine	(1917)*	Colorado
Medical College of Virginia (1908), (1911), Virginia (1915), Kentucky (1917, 2), Virginia.		
University College of Medicine, Richmond	(1912)	Virginia

* License not verified.

South Dakota July Examination

Dr. H. R. Kenaston, director, South Dakota State Board of Health and Medical Examiners, reports the written, oral and practical examination held at Deadwood, July 13-14, 1920. The examination covered 15 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 17 candidates examined, 16 passed and 1 failed. Six candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Hahnemann Medical College and Hospital		(1904)	84.9
Northwestern University		(1918)	89.2
Rush Medical College		(1918) 86.2, (1920) 86.1,	88.6
State University of Iowa Coll. of Homeo. Medicine		(1912)	84.7
State University of Iowa Coll. of Medicine		(1915)	87.6
University of Kansas School of Medicine		(1918)	84.6
Johns Hopkins University Medical Dept		(1920)	88.5
Detroit College of Medicine and Surgery		(1920)	81.2
University of Michigan Homeo. Medical School		(1907)	85.5
Missouri Medical College, St. Louis		(1898)	87.6
St. Louis University School of Medicine		(1916)	86.6
University of Cincinnati College of Medicine		(1919)	89
Western Reserve University School of Medicine		(1919)	85.1
University of Tennessee		(1896)	88.2
	FAILED		
National Medical University		(1909)	64.7

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University		(1910)	Minnesota
Rush Medical College		(1915, 2)	Minnesota
Univ. of Minn. Medical School		(1916), (1919)	Minnesota
McGill University Faculty of Medicine		(1889)	N. Dakota

New Hampshire September Examination

Dr. Charles Duncan, secretary, New Hampshire State Medical Board, reports the written examination held at Concord, Sept. 9-10, 1920. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 5 passed and 1 failed. Five candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Yale University		(1920)	86
Harvard University		(1920) 77, 78,	79
Tufts College Medical School		(1920)	83.8
	FAILED		
Baltimore Medical College		(1896)*	**

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Harvard University		(1901) (1919)	Mass.
Tufts College Medical School		(1919) (1920, 2)	Mass.

* Graduation not verified.
** No grade given.

Georgia October Examination

Dr. C. T. Nolan, secretary, Georgia State Board of Medical Examiners, reports the written examination held at Atlanta, Oct. 12-14, 1920. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Of the 9 candidates examined, 8 passed and 1 failed. Twelve candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Baltimore Medical College		(1903)	86.7
Johns Hopkins Univ. Med. Dept		(1918) 87.6, (1919)	92.6
Tufts College Medical School		(1916)	86.3
Columbia University		(1918)	85.7
Meharry Medical College		(1914) 82, (1920)	81.6
University of Nashville Medical Dept		(1900)*	80
	FAILED		
Meharry Medical College		(1920)	76.8

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Birmingham Medical College		(1898)	Alabama
George Washington University		(1909)	S. Carolina
Johns Hopkins University		(1912)	Arkansas, Maryland
University of Maryland School of Medicine		(1914)	Maine
North Carolina Medical College		(1909)	N. Carolina
University of Pennsylvania		(1905)	Penna.
Meharry Medical College		(1917), (1920,2)	Tennessee
Memphis Hospital Medical College		(1903)	Tennessee
University of Nashville		(1905)	Alabama

* Fifteen per cent. allowed for years of practice.

Book Notices

THE PRACTICAL CARE AND FEEDING OF CHILDREN. By Mary A. Duns. Third Edition. Cloth. Price, $1.75. Pp. 174. Chicago: Chicago Medical Book Company, 1920.

This book is affectionately dedicated to the baby for whose welfare it was written, and it carries the endorsement of some leading physicians and surgeons. The frontispiece shows the author surrounded by a constellation of twenty healthy looking babies. She does not hesitate to state her opinions dogmatically. She answers the question "why milk should not be boiled" by stating that when boiled the nourishing properties of the cream are destroyed, causing malnutrition, scurvy and numerous other ills of a serious nature. She further recommends the avoidance of all infant foods which call for boiled milk, though in the following paragraph she reconsiders, and contradicts herself by saying: "When you are in doubt about the milk being fresh, bring it to a boil." It need hardly be stated that the use of boiled milk is favored by many pediatricians for practical as well as for theoretical reasons. The author explains why cream should be used in the preparation of food for young children by saying that since an infant cannot digest cow's milk unless very much diluted, extra cream should be used to make up the loss of fat caused by the addition of water or other diluents. Apparently she loses sight of the fact that the difficulty in fat digestion of cow's milk renders it impossible to make the artificial food an exact substitute for mother's milk, no matter how closely percentage compositions of the foods may resemble each other. In another sentence she enlightens her large circle of readers with the assertion that "the formulas in this book are arranged to imitate as far as possible normal mother's milk." Oh, shades of the alchemists!

In her discussion of the sugars we are told that all malt preparations have a slightly laxative effect; that milk sugar is slightly constipating, and that cane sugar should be used only where ordered especially. That all malt preparations are laxative will be little comforting to many constipated babies and their mothers and nurses who are using these preparations in large quantities; that milk sugar is slightly constipating will be hailed as news by those who have thought that it was a readily fermentable sugar and increases peristalsis and fecal evacuation.

The author does not hesitate to state dogmatically that in her experience it is better to feed babies in small quantities every two and one-half hours than at longer intervals. After 2 months of age, she recommends that the baby be fed at three hour intervals. Such startling statements are so profuse that space will not permit mention of all the incongruities.

The statements about nursing, however, are so extraordinary that we venture to quote: "It is very unwise to nurse a baby entirely." "It is much better to commence at 2 weeks, giving one bottle each day." "It is a great mistake to think that a baby cannot be nursed and given the bottle alternately, as in my experience these 'combination' babies are much healthier and better satisfied." She gives some aphorisms on the regularity of feeding: "Infants should be fed at strictly the same hour whether awake or asleep." "Some children will eat while in a sound sleep." "Never disturb a child at night." "If it wants to eat it will let you know"!

Adults who constitute the group of quick lunchers, and babies with keen appetites should note the following: "Drinking milk quickly is dangerous for either a child or adult as the stomach is not prepared for it and large curds form sometimes causing convulsions." The author fails to explain why the stomach is not prepared for food or how it could be prepared, or how she knows it is not prepared. It would be interesting to know also why large curds cause convulsions. Why should the curds be larger if the milk is drunk rapidly? The most learned direction of all is this: "If the baby is spitting up its food when taking lime water, use soda; if using soda, change to lime water." The author certainly displays confidence in one or the other of these remedies.

We must not lose sight of the directions for treating bruises. "A piece of raw beef bound over the wound will prevent its turning black; after that put on warm witch hazel or arnica. If there is much pain alternate with a warm flaxseed poultice." For nosebleed, place a cold compress on the nose and make pressure and place a piece of ice wrapped in flannel at the nape of the neck. If this is not effective, plug one of the nostrils lightly with a little cotton. She warns against using force—just plug it lightly.

Like the ancient rhyme of Miss Jennie Jones, who had some occupation for every day in the week, so our author prescribes the menu for each day, making slight changes so that the mother of necessity could travel only short distances without this precious volume close at hand. The book is ludicrous, but its effects are serious because it appeals to the credulity of mothers. Glaring misstatements born of superficial knowledge and long repeated errors are interpreted as experience. Such books are a menace to progress in the scientific care of infants. They serve only to obstruct intelligent campaigns for infant welfare.

MATERNITAS. A Book Concerning the Care of the Prospective Mother and Her Child. By Charles E. Paddock, M.D., Professor of Obstetrics, Chicago Post-Graduate Medical School. Cloth. Price, $1.75. Pp. 210, with illustrations. Chicago: Cloyd J. Head & Co., 1920.

In this volume, Paddock has simply and effectively combined the essentials of prenatal care with a brief guide for the young mother in the care of the new-born. The book can be wisely chosen by almost any obstetrician as a supplement to his personal instruction of his prospective mothers without change or censor. The book is written solely for the expectant mother; accordingly, the facts concerning pregnancy are set forth in a concise and accurate manner, and can be comprehended by any intelligent woman. In the chapter on the hygiene of pregnancy a sensible regimen of hygienic and dietary rules is clearly detailed, and the commoner superstitious ideas concerning pregnancy are corrected. In the second part, in discussing the baby's food, the author missed a good chance to emphasize the value of prophylactic observation of the well babies—the infant welfare scheme—in place of advising the mothers to call the physician if "this or that" is wrong. The book has been entirely revised in the third edition with the addition of new material and illustrations. It has been carefully prepared and published, and is free from mistakes. The print is large and easy to read, and the illustrations are clear and refined. "Maternitas" and other books of this character deserve the hearty recommendation of the medical profession because of their inestimable value in furthering an important branch of preventive medicine, namely, prenatal care.

SOME CONCLUSIONS ON CANCER. By Charles Creighton, M.D. Cloth. Price, 42 shillings net. Pp. 365, with 114 illustrations. London: Williams and Norgate, 1920.

This volume is devoted to an exposition of the author's hypothesis that cancer is not essentially an overgrowth of epithelial cells in situ, continuous with preexisting epithelial cells, but, as nearly as we can interpret the presentation, that it is derived largely from endothelial cells lining blood vessels, under the influence of local changes in the blood. "The result is a kind of blood-gland, which in the case of epithelial organs replaces the proper glandular structure and function." In some cases a ferment action is supposed to reduce the blood to an assimilable condition, which causes the cells to take on neoplastic growth; in others, the presence of special cells with the function of carrying "reduced" blood accounts for the new growth. "Tumor malignancy is always due to cells feeding on the reduced substance of blood instead of metabolizing, storing or transmitting it." Plasma cells are supposed to be especially incriminated in this phenomenon. In the preface the author states that his work in cancer began fifty years ago, but that in later years he has worked chiefly in other fields; this probably explains an evident lack of familiarity with much of the recent work on cancer. The arguments presented to support the hypothesis advanced will not be convincing to many present day cancer research workers, or students.

Miscellany

THE WORKING OF "LEX VENERIS"

The Swedish venereal disease law which went in effect, Jan. 1, 1919, provides that (1) every person with venereal disease be treated as necessary and thus prevented from infecting others; (2) the source of contagion be sought and suppressed, and (3) penalties be imposed for knowingly exposing others to contagion. Treatment at specified dispensaries is free, but the patient may select his own physician if he wishes. He must sign a receipt for the circular given him on his first application, describing his rights and duties in the matter of the venereal disease and the penalties for not conforming strictly to the physician's directions. If he fails to return for treatment, the sanitary inspector is notified, and if he still fails to respond to warning notices, he can be arrested and interned in a hospital. The physician first consulted has to report the case to the sanitary authorities with the sex, age and residence, and such data as he can ascertain in regard to the source of the contagion. The sanitary inspector enjoins the suspected person to apply for examination and treatment if found necessary. The penalties for knowingly exposing another person to contagion are imprisonment, or a fine of 50 crowns in case of extenuating circumstances. If infection has occurred from the exposure, the imprisonment will be for two years or more at hard labor. Penalties are also provided for false accusations, and imprisonment at hard labor for from six months to four years for provocative prostitution or for profiting personally and permanently by prostitution in others, as by renting a room to a woman supporting herself by prostitution.

The law places venereal diseases on the same footing as other contagious diseases, and makes every one, rich and poor, equal before the law. It subordinates the individual to the collective welfare. The *Lyon médical*, in a recent survey of the Swedish law, points out a number of weak points in it, such as the fact that when a venereal patient enters a hospital no attempt is made to isolate him in a special ward, as the principle is followed not to betray the nature of his or her disease. The physician becomes a wheel in an administrative machine, and medical secrecy is lost to a certain extent. He transmits his data only to the sanitary inspector, but the latter has to have his orders carried out by nonmedical persons.

A recent issue of the *Hygienisk Revy* of Lund, Sweden, comments on results of the workings of the law. It states that there was scarcely any reduction in the cases of venereal disease encountered during 1919, but the statistics of the first six months of 1920 show that the "Lex Veneris" is now bearing fruit. The number of cases of syphilis recorded during the first six months of 1919 was 1,144, but the corresponding figure for 1920 was 615; of chancroid, 929 cases in 1919, and 309 in 1920. The total cases of venereal disease were 3,335 in 1919 and 2,495 in 1920. In January, 1920, there were 144 cases of syphilis, 75 of chancroid and 507 of gonorrhea recorded, while the corresponding figures in June, 1920, were 82, 32 and 379. The Göteborg city physician, Dr. Gezelius, has a communication in the same issue pointing out the one great defect of the law, namely, that no provision is made for penalizing those who do not apply for treatment when they have venereal disease. He adds: "The source of contagion was specified in 529 cases, and in 184 (35 per cent.) the disease was detected and treated. But in seventy-five there did not seem to have been any possibility of contagion. Some of these may have been previously in a contagious stage, but in the majority the denunciation must have been based on a mistake, whether intentional or not it is impossible to determine. That certain persons were thus falsely accused is more than probable, to judge from the indignation displayed by some of them, and their efforts to find out who the person was that had denounced them to the authorities. This is a matter of which the attending physician alone has cognizance. In ninety-nine instances the alleged source of infection was in another town. In 195 cases the patients refused to continue treatment as directed, but with the help of the police, 114 were

compelled to complete the course; eighty-one others were lost track of. The 3,230 cases recorded in 1919 included fifteen of inherited and 763 of acquired syphilis and 2,067 of gonorrhea."

Medicolegal

Board, Not Court, to Fix Salary of Health Officer

(Board of Supervisors v. Powell (Miss.), 84 So. R. 905)

The Supreme Court of Mississippi says that Dr. Powell, as the duly appointed health officer of Calhoun County, appeared before the board of supervisors, at their meeting in August, 1919, and asked that his salary be fixed in accordance with the statute. The board heard testimony and fixed the salary at $360 a year. Dr. Powell was dissatisfied with the amount, and took the matter to the circuit court, which fixed the sum at $600 a year. In reversing that judgment, the supreme court holds that, in Mississippi, the statutory authority to fix the salary of the county health officer is vested exclusively in the board of supervisors, and the circuit court has no right to review and reverse the discretion of the board and enlarge the salary so fixed, unless the board fixes the salary so low as to oust the officer or abolish the office. The case of *De Soto County* v. *Westbrook*, 64 Miss. 312, 1 So. 352, is authority for the proposition that, while the board of supervisors is charged with the duty of fixing the salary of the county health officer, yet the laws for the protection of the public health cannot be nullified, and the office cannot be abolished by fixing the salary so low that a competent physician would not accept the office. Such action is a nullity. But if the amount of salary as fixed by the board of supervisors is a material sum of money, and is not so small as to indicate an intention to ignore the law and abolish the office, then the amount so fixed is the measure of compensation, and the only measure of compensation, provided by law. As stated, the authority to fix the salary is vested in the board of supervisors, and exclusively in the board. If the circuit judge, on appeal, could review the testimony, and differ from the board as to what constitutes a reasonable compensation, then in the last analysis the authority to fix the salary would rest with the circuit judges, and not with the boards of supervisors. If the action of the board in any given case amounts to a nullity, the law affords a remedy and awards just compensation. The supreme court cannot say that $360 a year for the services of the county health officer in Calhoun County is so shocking to the conscience or unreasonably low as to abolish the office.

Liability of Hospital for Gauze Being Left in Wound—As to Evidence—Damages

(Walker Hospital v. Pulley (Ind.), 127 N. E. R. 559)

The Appellate Court of Indiana, Division No. 2, in affirming a judgment for $2,100 damages in favor of the plaintiff, Mrs. Pulley, says that she submitted to an operation, in the defendant hospital, for necrosis of the femur, and that it was alleged that it was the business of the hospital to furnish for hire medical and surgical aid to the afflicted, for which purpose it had in its employ a number of physicians, surgeons and nurses. Mrs. Pulley left the hospital about twenty days after the operation; and a little more than three weeks after she returned to her home and the wound had closed and reopened, a piece of gauze one-half inch in width and about 15 inches in length was drawn from the sinus. It was contended that the corporation was not liable for the gauze having been left in the wound, as the business was transacted in the name of two physicians as partners, the corporation existing merely for the purpose of owning the real estate and hospital equipment, of employing nurses and acting as the business manager and agent of the firm; but the court holds that the verdict against the hospital was justified. The court also holds that statements made by one of the surgeons to Mrs. Pulley, when she was a patient in the hospital, relating to her physical condition, were admissible in evidence, over the objection that there was no proof that the surgeons were employees or agents of the corporation; as was also a letter written by one of the surgeons to Mrs. Pulley's home physician. Nor does the court think that there was any error in admitting in evidence roentgenograms of Mrs. Pulley's teeth, taken later at another hospital for the purpose of determining whether she had septicemia; the testimony of another woman as to the physical condition of Mrs. Pulley as evidenced by her ability to work before and after the surgical operation, and the piece of gauze taken from the sinus.

Another contention was that there was no competent evidence tending to prove that the presence of the gauze in the sinus, for the length of time and under the conditions disclosed by the evidence, resulted in any injury to the patient, the contention being that the causal relation, if any, between the negligence and the pathologic conditions of the patient, which developed after she returned to her home, could be proved only by the testimony of experts, and that there was no expert testimony on that subject. In other words, counsel earnestly insisted that whether the presence of the gauze in the sinus, which was permitted to heal superficially and enclose the gauze in the flesh for a period of at least thirty days, was the cause of the unfortunate conditions which followed and of the suffering endured by the patient was a question which could be answered only by men skilled in medical science. But the court does not agree with that contention. The questions ordinarily involved in malpractice cases, such as whether a surgical operation was negligently performed or whether the care and attention following the operation were negligent, and the like, are questions of science; and necessarily the evidence from which those questions are to be determined must come from physicians and surgeons. The general rule is that where negligence is predicated on lack of skill or attention, the court and jury must depend on expert evidence. The court cannot concede, however, that the general rule was applicable in all respects to the case at bar. By that statement the court means to say that in its opinion jurors of ordinary intelligence, sense and judgment, although not skilled in medical science, are capable of reaching a conclusion without the aid of expert testimony as to whether it is good surgery to permit a wound to heal superficially, with nearly half a yard of gauze deeply embedded in the flesh, and likewise are capable of determining whether or not injurious consequences of some character would probably result. The exact nature and extent of the evil consequences resulting therefrom, of course, laymen would not be competent to determine without the aid of medical science.

The damages awarded, $2,100, the court does not think were excessive. In actions of this kind the law furnishes no fixed measures of damages to aid the jury. In such cases the amount to be awarded must depend on the sensibilities and the judgment of the jurors. In this case the amount was not so large as to create the impression that the jurors were actuated by passion, prejudice or any improper influence or motive.

Releases Got by False Statements as to Injuries

(Quapaw Mining Co. v. Cogburn (Okla.), 190 Pac. R. 416)

The Supreme Court of Oklahoma, in affirming a judgment in favor of the plaintiff for $9,650 damages for personal injuries notwithstanding a previous settlement and release in consideration of a payment of $2,000, holds that, in a personal injury case, where the person or corporation responsible for the injury, or his or its agent, falsely represents to the injured party what a physician or surgeon thinks or has said about his injuries, it is a fraud which will justify the rescinding of a release executed in reliance on such false statements. Where the professional opinion relied on is not given directly by the physician to the patient, but is communicated to him by a third person, it is the duty of the latter to repeat it with entire correctness. And where the injured person is induced to execute a release of damages by the false and fraudulent representations of a physician in the employment of the defendant, or sent to him by the latter, that his injuries are but slight or temporary, the physician well knowing the contrary, the release will not be binding.

Society Proceedings

SOUTHERN SURGICAL SOCIETY

Thirty-Third Annual Meeting, held at Hot Springs, Va., Dec. 14-16, 1920

(Concluded from page 133)

Relaxation of the Vaginal Outlet: Is the Obstetrician Responsible?

DR. LUCIUS E. BURCH, Nashville, Tenn.: Relaxation of the vaginal outlet is caused by overstretching of the levator ani muscle and a lack of tone following labor. It is impossible for the obstetrician to determine at labor whether the muscle will regain its normal function or not. All lacerations following labor should be repaired immediately for the purpose of preventing sepsis. The condition is easily cured at secondary operation by bringing together the overstretched muscle in the median line by interrupted sutures.

Kraurosis Vulvae

DR. FRANCES REDER, St. Louis: In kraurosis vulvae the histologic changes are situated in the dermis and consist of a general atrophic process involving all the structures of the vulva, with marked contraction of the vaginal orifice. The clinical picture of pruritus and leukoplakic vulvitis discloses so many features in common with kraurosis that the inference could be made that kraurosis is an expression of a severe degree of these lesions, and that without pruritus and leukoplakic vulvitis there would be no kraurosis. Some investigators recommend in the more pronounced cases of kraurosis with dyspareunia an incision widening the vaginal outlet. I would advise against this procedure, as it has no beneficial influences on the condition, and does not prevent a subsequent contraction of the ostium. I have treated two patients by operation. The relief they obtained was most gratifying. Up to date they are free from suffering, with no evidence of recurrence. The operations were performed nine and eleven months ago, respectively.

Ureteral Stricture and Pyelitis

DR. J. N. BAKER, Montgomery, Ala.: Among fifty cases studied the ratio of incidence of the right sided lesion as compared with the left was as 2 to 1, and that of bilateral to unilateral incidence was as 1 to 4.5, approximately. In forty-nine, or 98 per cent., an appreciable obstruction could be demonstrated at some point within the ureter above its entrance into the bladder by means of the wax bulb implanted on the catheter. In thirty-five, or 70 per cent., the obstruction was from 3 to 6 cm. above the bladder opening or within the broad ligament area. In fourteen, or 28 per cent., the obstruction occurred from 9 to 12 cm. at or near the pelvic brim. The only case in which ureteral obstruction was not revealed was that of a child of 13 with bilateral pyelitis.

Surgical Treatment of Acute Pelvic Infections in Women

DR. F. G. DU BOSE, Selma, Ala.: Failure to remove the focus of infection renders the operation relatively valueless. Pelvic débridement is urged. Pyogenic membranes with infected tubes, uterus and ovaries should be removed.

Value of Local Anesthesia in Surgery Today

DR. WILLARD BARTLETT, St. Louis: Ether by the drop method is the anesthetic of choice in our clinic for major surgery in general, and local anesthesia in some form for minor surgery. Local anesthesia has definite limits which are not to be transgressed. With increasing experience and better training, we shall some day have to establish indications for general rather than for local anesthesia. The anesthetization should never be larger than the operation. Under ordinary circumstances, one should not attempt a radical breast operation or any abdominal procedures which involve both sides of the midline, under local anesthesia alone. The operator will have to train himself or an associate especially for this work if he expects to be successful in it. There is a very definite field for the local anesthetist. His services ought to be in demand by the surgeon who makes only an occasional use of these methods, or by one who is not temperamentally suited to the acquirement of them.

Laryngeal Function in Thyroid Cases

DR. E. S. JUDD, Rochester, Minn.: The functional results following thyroidectomy, as concerns both phonation and respiration, are extremely good. The disturbance which sometimes follows immediately after the operation is temporary, and normal function will be restored in from a few days to a few weeks. There is a small group of patients who, following thyroidectomy, have a bilateral abductor disturbance which is slow in onset, but is very persistent. We have been unable to work out the cause of this condition but believe that it may be due to the contraction of a scar, to a peculiar type of trauma to the nerve, or to some form of toxemia.

Ulcer of Jejunum Following Gastro-Enterostomy

DR. J. SHELTON HORSLEY, Richmond, Va.: The cause of jejunal ulcer after gastro-enterostomy is the pouring of acid gastric juice directly into the jejunum, which is physiologically fitted for only alkaline contents. Doubtless many ulcers after gastro-enterostomy do not come to operation, and for every jejunal ulcer that is formed, there are probably many instances of irritation and hyperemia of the jejunum which are not sufficiently severe to produce ulcer and yet cause symptoms. The generally accepted treatment of jejunal ulcer after gastro-enterostomy is to disconnect the gastro-enterostomy and perform a pyloroplasty. If a pyloroplasty had been done in the first instance, the jejunal ulcer would have been avoided. I have had a case of jejunal ulcer that occurred on the mesenteric border of the jejunum opposite the gastro-enterostomy.

Surgery of Gallbladder

DR. T. CASEY WITHERSPOON, Butte, Mont.: In the early period, when no prohibitive coincident malady exists, the removal of the gallbladder not only is justifiable, but should be done by the surgeon. In the later period when gallstones or chronic inflammation obstruct the flow of bile, there can still be no question as to the advisability of a radical procedure, conjoined always with careful exploration of the common duct insuring its patulousness.

Large Ovarian Cyst in an Infant Seven Months of Age

DR. WILLIAM A. DOWNES, New York: This paper will be published in full in THE JOURNAL.

Gastric and Duodenal Ulcer

DR. CHARLES H. MAYO, Rochester, Minn.: I believe that peptic ulcer is rare and represents less than 1 per cent. of the findings at necropsy. In the aggregate, the condition occurs in thousands of persons, many of whom apparently never suffer from symptoms of gastric origin; others do not appreciate their symptoms. When acute and chronic bleeding, perforation and mechanical obstruction were the main diagnostic points of ulcer, hemorrhage was relied on in making the diagnosis. These symptoms lost their importance as diagnostic ability improved. In a study of the results of 647 operations performed in the Mayo Clinic on 638 patients with calloused ulcer of the stomach, from July 1, 1914, to July 1, 1919, the average mortality was 3.2 per cent.; that is more than double the average mortality in 2,734 operations performed in the same period on 2,720 patients with duodenal ulcer. Many ulcers believed to be benign and excised showed the presence of a carcinoma in a limited area of the margin. In eighty-nine operations performed in the Mayo Clinic for hour-glass stomach, the operative mortality was 7.4 per cent. The sleeve resection of the central portion of the stomach, usually with gastro-enterostomy, is performed. If there is recurrence, the lower half is removed at the second operation, the narrowed proximal portion being united to the jejunum, and sometimes to the duodenum. As a rule, the same type of union of the stomach with the duodenal end or the jejunum is made for extensive ulceration and thickening and for local cancer in the pyloric region after resection of the stomach. Graham, in an investigation of 438 cases of duodenal ulcer, found that from the standpoint of the patient 70 per cent.

who survived the operation considered themselves well following gastro-enterostomy, 27 per cent. improved, and 3 per cent. unimproved.

Appendicitis and the Rubber Glove

DR. ROBERT T. MORRIS, New York: The rubber glove lessens the tactile sense and stands in the way of some of the neatest work, which is sometimes desirable in appendicitis with adhesions. More bacteria fall into a large incision from the air than are carried in by a properly prepared hand minus the glove. The rubber glove has its place in standardized surgery, but a loophole must be left in hospital rules in cases in which hospital authorities, in their commendable zeal for standardization, make the wearing of rubber gloves obligatory in all operative work; otherwise hospital rules will stand in the way of the best surgery in some cases.

Delayed Transplantation of Long Pedicled Flaps

DR. V. P. BLAIR, St. Louis: In making a pedicle flap, about the vitality of which there is the least doubt, most of the uncertainty can be dispelled by dividing the operation into several steps—first, outlining the flap, raising it from its bed and immediately suturing it back into the same bed, after controlling all bleeding. The flap is allowed to remain there for a week or ten days before transferring it to its new position. At this later period either the circulation through the base has become vigorous, or, if any part of the flap has died, the line of demarcation is already established. If the transfer is delayed more than two weeks, excessive shrinkage of the flap occurs and also the circulation through new vascular connections in the bed lessen the energy of the circulation through the base.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

December, 1920, **10**, No. 12

*Social Uses of Medicine. D. B. Armstrong, Framingham, Mass.—p. 921.
Standardization of Laboratory Methods. A. B. Wadsworth, Albany, N. Y.—p. 932.
*Classification of Diphtheria Bacilli Based on Toluidin Blue-Iodin Method of Staining. H. Albert, Iowa City.—p. 936.
Relative Functions of Health Agencies. I. Viewpoint of Official Agency. H. Emerson, New York.—p. 941.
Id. III. Viewpoint of Non-Official Agency. C. J. Hatfield, New York.—p. 948.
Id. III. What is the Matter with Public Health? C. T. Nesbitt, Akron, Ohio.—p. 953.
Id. IV. Relation Between Official and Non-Official Health Agencies. F. G. Curtis, Newton, Mass.—p. 956.
Id. V. Coordination of State and Private Enterprises in Public Health Work. W. H. Hattie, Halifax, N. S.—p. 961.
Meaning and Purpose of Socializing Medicine. I. S. Wile, New York.—p. 969.
Practical Disinfection of Tuberculous Sputum. W. R. Stokes and C. H. Douthirt, Baltimore.—p. 973.
Child Hygiene. J. Levy, Newark, N. J.—p. 976.
Judging the Keeping Quality of Milk by a H-ion Method. L. H. Cooledge and R. W. Wyant, East Lansing, Mich.—p. 978.

Social Uses of Medicine.—Armstrong discusses the accomplishments of medicine, the inadequacies of medical practice, need for socialization, socialization to date, impending social developments, handicaps of present day practice, objections to social medicine, and the benefits of socialization to the physician and to society. The problem, he says, is an exceedingly difficult one. The program needs the cooperation and guidance of the medical profession, which is social in spirit though in need of socialization as to method. The physician has never had a real chance in social organization. He has been given the disagreeable, if not impossible task of putting together the pieces. The object of medicine is a healthy community life. Up to the present, the doctor has been expected to do all the work, either individually or through the gradually developing medicosocial organizations. What must be demanded, maintains Armstrong, are a maximum service for the sick regardless of their ability to pay, and a chance for the physician to give maximum service in disease prevention, treatment and cure. He advocates that medical societies appoint committees to study the whole problem of social tendencies in medicine, not only the health insurance piece-meal aspect of it, and formulate a program of action, "a program through the gradual execution of which all may learn to breathe the ampler air of service."

Classification of Diphtheria Bacilli.—Albert's classification of diphtheria bacilli based on the toluidin blue iodin method of staining, contains eight classes—four granular and four barred. Intermediate forms containing both bars and granules are common. The rather solid forms may be regarded as either immature or atypical. The classification includes the following types: G1 (granular short); G2 (granular medium); G3 (granular long); G4 (granular clubshaped); B1 (barred short); B2 (barred medium); B3 (barred long); B4 (barred club-shaped).

American Journal of Roentgenology, New York

November, 1920, **7**, No. 11

Relation of Roentgenology to Clinical Medicine with Special Reference to Gastro-Enterology. R. W. Mills, St. Louis.—p. 523.
Anomalous Relation of Roentgenology to Medical Practice. W. W. Watkins, Phoenix, Ariz.—p. 531.
*Action of Buried Tubes of Radium Emanation on Normal and Neoplastic Tissues. H. J. Bagg, New York.—p. 536.
Roentgen Rays in Treatment of Fibroma and Uterine Hemorrhages. J. E. Panneton, Montreal.—p. 544.
*Radiumtherapy in Cancer. I. Levin, New York.—p. 552.
Stereoscopic Tube Stand Particularly Adapted for Examination of Skull. P. C. Hodges, Peking, China.—p. 564.

Action of Buried Tubes of Radium Emanation.—A series of experiments made by Bagg have definitely indicated, in his opinion, the therapeutic advantage of the treatment of certain cancers by means of small unfiltered glass tubes containing relatively little radium emanation per tube. Less than 1 mc. is a satisfactory dose; in fact, 0.5 mc. was found to be a most advantageous amount to use. The emanation tubes should be imbedded about cm. distance apart if the best results are to be obtained. Histologic examination of tissue so treated showed the presence of a pronounced leukocytic infiltration which tended to wall off the necrotic area about the emanation tubes.

Rationale of Radiumtherapy in Cancer.—Levin maintains that a closer student in the domain of radiumtherapy cannot fail to appreciate the fact that radium is the most powerful agent in the whole therapeutic armamentarium of medicine, and that the selective action of the element, when the quantity and quality are correctly adjusted presents a most remarkable phenomenon. Moreover, not all the failures by far must be ascribed to the inefficiency of the agent. The percentage of cases suitable for radiumtherapy is as small as the number of cases suitable for radical surgery. Even if radiumtherapy should not have accomplished anything else, it is of great value because it is gradually dissipating the feeling both in the profession and among the laity that a diagnosis of cancer means a death warrant.

American Review of Tuberculosis, Baltimore

December, 1920, **4**, No. 10

*Relation of Mineral Dusts to Tuberculosis. L. U. Gardner, Saranac Lake, N. Y.—p. 734.
*Attempt to Produce Experimental Tuberculous Pleural Effusions and Empyemas in Rabbits. H. J. Corper and O. B. Rensch, Denver.—p. 756.
*Effect of Prolonged Pneumothorax on Tuberculosis of Lungs of Rabbits, Following Intravenous Injection of Tubercle Bacilli. H. J. Corper and O. B. Rensch, Denver.
Pulmonary Distribution of Finely Divided Suspensions Injected intravenously into Rabbits after Production of Artificial Pneumothorax. H. J. Corper and O. B. Rensch, Denver.—p. 769.
*Sodium Morrhuate in Pulmonary Tuberculosis. M. Biesenthal, Chicago.—p. 781.
Tuberculous Meningitis as Complication of Pulmonary Tuberculosis. W. S. Duboff, Edgewater, Colo.—p. 784.
Pregnancy and Tuberculosis. J. H. Elliott, Toronto.—p. 792.
Climate and Tuberculosis. L. S. Peters, Albuquerque, N. M.—p. 798.

Relation of Mineral Dusts to Tuberculosis.—The relatively early lesions in experimental pneumoknoiosis produced by granite inhalation and their influence on pulmonary tuberculosis are reported on by Gardner. Under the conditions of

this experiment where the R1 strain of tubercle bacillus has been used to infect guinea-pigs by the inhalation method, coincidently and previously exposed to granite dust of a given concentration, it may be concluded: That the occurrence of tubercles is more frequent in the dusted than in the undusted lung. That such lesions tend to run a more prolonged course than those in animals not exposed to duct. That the spread of the tuberculous process to the regional lymph nodes is not prevented.

Experimental Tuberculous Pleural Effusions.—Corper and Rensch maintain that virulent human tubercle bacilli in fine suspension in gum saline 7 per cent. accacia in physiologic sodium chlorid solution injected intrapleurally on the right side into normal rabbits tend to clump and form clusters of tubercles especially toward the lower or anterior portions of the right pleural cavity and on the right side into normal rabbits tend to clump and form clusters of tubercles especially toward the lower or anterior portions of the right pleural cavity and on the right lung and toward the mediastinum. There does not seem to be any difference in the gross final results of the intrapleural injection of the living virulent human tubercle bacilli, regardless of whether the rabbits have received either a subcutaneous or an intravenous (sensitizing) injection of the same culture one month prior to the intrapleural injection. The finer histologic tubercle differences were not studied. In rabbits there is no more tendency to form pleural effusions or an empyema following the intrapleural injection of virulent (for guinea-pigs) human tubercle bacilli in those animals having received either a subcutaneous or an intravenous injection of the same culture of tubercle bacilli one month prior to the intrapleural injection than in a normal rabbit not having received such preliminary sensitizing injection, this making it impracticable to use this method in the rabbit for the production of tuberculous effusions or empyemas for experimental therapeutic or other studies.

Effect of Prolonged Pneumothorax on Tuberculosis.—Prolonged artificial pneumothorax in rabbits sufficient to induce good collapse of the right lung, initiated shortly after the intravenous injection of a suspension of virulent human tubercle bacilli and maintained for a period of a month by means of the intrapleural injection of air every second or third day throughout the experimental period, had no appreciable effect on the size or number of macroscopic tubercles found by Corper and Rensch in the lungs of the treated animals as compared to the untreated, or in the compressed right lungs as compared to the noncollapsed left lung.

Sodium Morrhuate in Tuberculosis.—Twenty-five patients were treated by Biesenthal with sodium morrhuate. A 3 per cent. solution in sterile water with 0.5 per cent. phenol was made. Placed in a sterile bottle and sealed with a rubber cap, the product was then again sterilized in an autoclave. An initial dose of 0.125 c.c. was given subcutaneously. This dose was increased by 0.125 c.c. in semiweekly injections until a dose of 1 mil was reached. Then only a single injection was given each week. In addition to the drug each patient received the usual routine of sanatorium care. As a result of his work Biesenthal agrees with Rogers that sodium morrhuate is not a specific for tuberculosis. But he does not agree with Rogers that in the use of the drug we have the best line of treatment for tuberculosis in general. The drug does not seem to have any beneficial action on the reduction of temperature. One patient suffered a pulmonary hemorrhage while under treatment. No special or serious reactions were noted.

Annals of Surgery, Philadelphia

December, 1920, **72**, No. 6

*Multiple Polyposis of Intestinal Tract. J. E. Struthers, Rochester, Minn.—p. 649.
*Case of Diaphragmatic Hernia Observed Postmortem. L. F. Huffman, Cleveland.—p. 665.
*Hernia of Diaphragm. F. S. Mathews and H. M. Imboden, New York.—p. 668.
Direct Inguinal Hernia. J. P. Hoguet, New York.—p. 671.
Development of Inguinal Hernia Through Femoral Ring Following Descent of Testicle by Same Route. A. M. Fauntleroy, U. S. Navy.—p. 675.
*Operation to Form New Anal Sphincter After Operations on Lower Rectum. A. J. Brown, Omaha.—p. 676.
Technic of Partial Colectomy by Mikulicz Two-Stage Method. C. N. Down, New York.—p. 681.
*Primary Carcinoma of Vermiform Appendix in Sisters Suffering from Tuberculosis. A. Primrose, Toronto, Can.—p. 690.
Radical Operation in Cases of Advanced Cancer. J. W. Churchman, New York.—p. 698.
Radium in Treatment of Carcinoma of Cervix Uteri. E. H. Risley, Boston.—p. 701.
Bone Tumors. Myxoma, Central and Periosteal. J. C. Bloodgood, Baltimore.—p. 712.
*Three Cases of Hypophysial Duct Tumors and a Fourth Case of Cyst of Rathke's Pouch. W. C. Duffy, New Haven, Conn.—p. 725.
War's Contribution to Civil Surgery. B. J. Lee, New York.—p. 758.
Sehrt's Metal Touriquet for Producing Artificial Anemia. W. Meyer, New York.—p. 763.

Multiple Polyposis of Intestinal Tract.—Thirty-nine cases of this condition are analyzed by Struthers. All but five had periods of diarrhea later; these included two patients with constipation, two with abdominal distress, and one with diagnosis of duodenal ulcer. Constipation, although the chief complaint on admission in all but one case, was marked in one patient with general abdominal pain, in one with marked rectal pain, and in a patient with frequency of urination. Fifteen of the patients had some rectal complaint, although it was an early symptom in but eight. In the more severe cases in which the colon and rectum were extensively involved by polyposis, the onset of the disease was gradual, with but few exceptions becoming progressively worse over a period of many years. Thirty cases were diagnosed multiple polyposis. In twenty-eight there were positive proctoscopic findings, two by means of the roentgen-ray, one a case of gastric polyposis, and one a case of multiple polypi of the descending colon with filling defect. In three of the remaining cases a probable clinical diagnosis of multiple polypi was made. Twenty-two of the thirty-nine patients came to operation. The Brown was the primary operation in ten cases. In one other case it was secondary to a colostomy performed elsewhere; in two cases it was followed by an ileocolostomy; in two by a colectomy; in two by an ileosigmoidostomy; and in four there was no second-stage operation. There were four primary ileocolostomies; two colectomies with the exception of 12 inches of the sigmoid and rectum; one was a permanent ileostomy; one was a complete colectomy with removal of 5 inches of the lower ileum, and permanent ileostomy; one was a Mikulicz first and second stage operation; one was a Kraske, secondary to a colostomy; one was an appendicostomy; one was a Desquin-Mixter midline cautery operation, and one was a partial resection of the stomach and removal of three fifths of the pylorus. Nineteen of the twenty-two cases of intestinal polyposis treated surgically are accounted for, with a mortality of nine (47.34 per cent.). Questionnaires were sent to fourteen medical patients and replies were received from twelve. Four reported that they were so markedly improved that they consider themselves well; three simply reported they are improved; one is unimproved and one is growing progressively weaker.

Diaphragmatic Hernia.—The case reported by Huffman is one of true diaphragmatic hernia occurring through a congenitally weak esophageal opening. The gastrohepatic omentum, lesser curvature, cardia and finally all of the stomach except the pylorus were herniated into the chest.

Diaphragmatic Hernia.—The hernial opening in Mathews and Imboden's case was the enlarged esophageal one. Two mattress sutures of heavy chromic gut were placed at the anterior margin of the ring. The ring was at least 2 inches in diameter and by means of the stitches seemed to be considerably narrowed. The stomach was then sutured to the whole length of the abdominal incision. The result was wholly satisfactory.

Making New Anal Sphincter.—By means of the operation described by Brown, the lower 6 inches of the rectum can be removed by the perineal route and a new sphincter which will function can be formed from the levator ani muscles. Cases of carcinoma suitable for operation by this route can he says be relieved with less danger to life than by the combined operation, and patients subsequently live in comparative comfort.

Carcinoma of Appendix in Sisters.—Two cases of primary carcinoma of the appendix occurring in sisters, both of whom

suffered from tuberculosis are reported by Primrose. In one case the patient had pulmonary tuberculosis and the other had primary tuberculosis of the fallopian tubes. Both patients made good recoveries from the operations performed.

Hypophysial Duct Tumors.—Duffy reports three cases of hypophysial duct tumors and a case of cyst of Rathke's pouch. He also reviews the literature.

Canadian Medical Association Journal, Toronto

December, 1920, **10**, No. 12

*Roentgen-Ray Study of Liver Atrophy. G. S. Strathy, Toronto.—p. 1073.
Abscess of Lung. W. S. Lemon, Rochester, Minn.—p. 1079.
Pulmonary Abscess. J. E. Lehmann, Winnipeg.—p. 1090.
Surgical Tuberculosis. F. N. G. Starr, Toronto.—p. 1096.
*Treatment of Diabetes Mellitus. E. H. Mason, Montreal.—p. 1105.
Study of Colon by Opaque Enema. L. J. Carter, Brandon.—p. 1112.
Bleeding Uterus; Its Pathology, Diagnosis and Treatment. A. C. Hendrick, Toronto.—p. 1122.
Epidemic Spinal Meningitis Complicated by an Intercurrent Attack of Measles. W. K. Hall, Vancouver.—p. 1131.

Liver Atrophy.—Strathy suggests that atrophy of the liver is commoner than is generally believed. He has found it in cases of catarrhal jaundice as well as in arsenical poisoning jaundice. It is recognized that many cases of chronic dyspepsia are slight cases of atrophic cirrhosis and this may be diagnosed by roentgen-ray examination only when the liver shadow is carefully studied. In studying the liver shadow, more attention should be directed to the width from right to left, than to the depth from above downward, and decrease in the transverse diameter is usually shown by the acute hepaticovertebral shadow, the appearance of the stomach bubble closer to the middle line than normal and the lower border of the liver shadow becoming more nearly vertical than normal.

Treatment of Diabetes Mellitus.—One hundred and fifty-three cases of diabetes mellitus treated in the metabolism clinic of the Royal Victoria Hospital form the basis of Mason's paper. A method of treatment has been used which has given more uniformly satisfactory results than any previous one. It is based largely on one used in the hospital of the Rockefeller Institute for Medical Research. The plan is to give a so-called observation diet which is simply a diet on which an idea of the severity of the case can be obtained. It contains enough protein to maintain nitrogen equilibrium in an adult at rest with an intake of 25 calories per kilogram body weight. It is usually continued for three days' duration. The next step is to free the patient from glycosuria, lowering the blood sugar to normal. This is accomplished by cutting the observation diet in half, then one quarter, and then fasting. During this latter period patients receive three times boiled vegetables, bran cakes, made from washed bran and agar-agar, and chicken broth diluted with the fat skimmed off. Very few patients tend to develop any acidosis by this method of approaching starvation, and it is less time consuming than Joslin's method. The carbohydrate tolerance is determined on green vegetables. It is continued until there is glycosuria two days in succession with the same intake of carbohydrate. After the carbohydrate tolerance has been determined the next thing to do is to free the patient from glycosuria, which is invariably easily accomplished by one day's fast. Then the patient is built up to the trial maintenance diet, through two or three graded stages. This diet is often sufficient to maintain nitrogen equilibrium in many adults. If the blood sugar permits, supply 30 calories per kilogram body weight. This is the stage at which most patients are discharged from the hospital, when they are in nitrogen equilibrium, free from glycosuria, and with their blood sugar as near normal as possible. On discharge each patient is supplied with a unit equipment consisting of a gram scale, a 100 c.c. measuring graduate, the urinalysis equipment and solutions. They are also kept supplied with a printed weekly report sheet on which they note their daily volume output of urine, its glucose content, the ferric chlorid reaction, and the grams of protein, fat, and carbohydrate eaten. This report sheet has been found to be most valuable by Mason and others who have used it in the intelligent following of the case.

Georgia Medical Association Journal, Atlanta

December, 1920, **10**, No. 7

Traumatic Rupture of Bladder Through Rectum. Round Worms in Appendix. F. K. Boland, Atlanta.—p. 181.
Importance of Determining Casual Factors in Mental Diseases. J. N. Brawner, Atlanta.—p. 183.
Some Essential Factors in Infant Feeding. M. M. McCord, Rome.—p. 186.
*Epidemic Encephalitis. L. M. Gaines, Atlanta.—p. 190.
Significance of Hemoptysis. E. W. Glidden, Alto.—p. 194.
Toxic Goiter; Diagnosis. R. L. Rhodes, Augusta.—p. 198.
Treatment of Chronic Osteomyelitis. W. L. Thornton, Atlanta.—p. 203.

Epidemic Encephalitis.—Gaines reports six cases of this disease which has been prevalent in Georgia since 1918. He also reviews its clinical history and course. He cautions the general practitioner to suspect epidemic encephalitis when there is headache, ocular palsies and diplopia, with slight fever and insomnia followed by lethargy. He agrees with other observers that in many atypical cases the diagnosis is difficult and may be only a surmise.

Iowa State Medical Society Journal, Des Moines

Dec. 15, 1920, **10**, No. 12

Psychiatry and General Practitioner. M. E. Witte, Clarinda.—p. 399.
Roentgen Ray in Diagnosis of Sinus Disease. S. B. Chase, Fort Dodge.—p. 404.
Sequels of Infectious Diseases of Childhood. J. S. Gaumer, Fairfield.—p. 408.
Anesthetist and His "Power of Attorney." R. M. Waters, Sioux City.—p. 413.
Back Pains. P. E. Gardner, New Hampton.—p. 415.
Arthritis Deformans. K. H. Bock, Dowagiac, Mich.—p. 419.

Journal of Infectious Diseases, Chicago

December, 1920, **27**, No. 6

*Hemorrhagic Meningo-Encephalitis in Anthrax; Report of Three Cases. S. J. House, Chicago.—p. 513.
*Fate of India Ink Injected into Blood. K. Nagao, Chicago.—p. 527.
Fermentation of Xylose by Bacteria of Aerogenes, Paratyphoid B. and Typhoid Groups. E. B. Fred and W. H. Peterson, Madison, Wis.—p. 539.
*Transmission of Specific Immune Bodies from Mother to Young. K. M. Howell and H. Erby, Chicago.—p. 550.
*Blood Changes and Antibody Production in Human Beings After Injection of Pneumococcus Lipovaccine. K. M. Howell, Chicago.—p. 557.
*Production by Streptococcus Hemolyticus of Agglutinin for Red Corpuscles which Inhibits Hemolysis. K. M. Howell, Chicago.—p. 565.
Comparison of Antigens for Bacterial Complement Fixation. K. M. Howell, and R. Anderson, Chicago.—p. 569.
Practical Method in Purification of Obligate Anaerobes. I. C. Hall, Chicago.—p. 576.
*Testing of Germicidal Substances Against Gonococcus. D. M. Davis and E. O. Swartz, Baltimore.—p. 391.
*Thermal Death Point in Relation to Time of Typical Thermophilic Organisms. W. D. Bigelow and J. R. Esty, Washington, D. C.—p. 602.
Epidemiology of Hemolytic Streptococcus Carriers, Based on a Study of Subgroups. J. E. Walks, Washington, D. C.—p. 618.

Hemorrhagic Meningo-Encephalitis in Anthrax.—A number of cases of anthrax have occurred in Chicago recently, many of them among workers in the "curled hair" industry. In at least three of these cases there were brain complications and in two of the three anthrax was not suspected until after death. It seems reasonable therefore, to suspect that from time to time similar cases may go unrecognized." In an effort to eliminate such a possibility House urges that a careful microscopic and bacteriologic study should be made of every bloody spinal fluid, provided one is certain that the blood is not a contamination; and especially should this be done if there are symptoms of cerebral irritation. These cases can be easily recognized at necropsy by the soft, red viscid brain, especially if there is a history of an acute illness not resulting from trauma. On account of the large quantity of blood which is sometimes present it would be easy for one who had not seen such brains to attribute the cause to trauma, but this may be avoided by recognizing the inflammatory quality of the changes and by checking up with stained smears of the exudate. The lesions in the brain in anthrax are essentially extravascular, meningo-encephalitic, and the acute hemorrhagic nonpurulent nature of the inflammation with destruction of tissue by edema is similar to that produced by anthrax in other places of the body. With suitable stains large numbers of bacilli may be found in these lesions. The infection of one of the brains of this series was evidently by the hematogenous route, first, because the primary focus was so far

removed (intestine) and second, because of the finding of small bacillus-containing foci of edema and dissection along the vasa vasorum of the leptomeningeal vessels.

Fate of India Ink Injected Into Blood.—Nagao found that when a suspension of India ink is injected into the blood the mucous membranes and spleen become black and remain so for variable lengths of time, depending on the amount injected. Free granules are present in the blood for several hours when large quantities are injected, but disappear sooner after smaller quantities. Ink granules are deposited regularly in the endothelial cells of the liver, spleen and marrow and in the splenocytes, and are eventually gathered together in accumulations of considerable extent. In the liver the granules are passed along from the centers to the borders of the acini and into Glisson's capsule. In the spleen the granules are accumulated irregularly, often at the outskirts of, or in, the malpighian bodies. In the marrow there is no special arrangement of the granules. In the peritoneum and in the osteal canals, granules appear in the later stages after the injection, some perhaps reaching in the lymph spaces from the marrow. After large injections, osteoblasts and osteoclasts may take up granules. Only a small number of granules appear in the suprarenals, kidneys and lungs. In the earlier stages there usually are few granules in the lymph node but after some time granules appear regularly in certain nodes (cardiac, hepatoduodenal, jugular) which may be quite black. Few granules are generally deposited in the blood vessles and more in the venous than in the arterial vessels. After large doses granules are found in the endocardial cells. In late stages after the injection connective tissue and other cells in various parts of the body may contain granules, but without any regular distribution. In the blood polymorphonuclears and mononuclears take up granules; large lymphocytes do so only occasionally. After the injection a considerable number of erythroblasts appear in the blood, especially after large doses; the number continues to increase for about six hours when there is a rapid drop, normal conditions being reached in about a week or so. Various abnormal cells also appear in the blood, often containing granules, and sometimes granules are found in erythroblasts. The eosinophils and mast cells do not take up granules.

Transmission of Specific Immune Bodies.—Howell and Eby state that antisheep and antihuman hemolysin was decreased in immunized rabbits after parturition. The serum of their offspring contained hemolysin, but in lesser amounts than in the immune mother. There was little hemolysin in the serum of the young at the end of the sixth week and none at the end of the eleventh week. Complement-fixing antibodies almost disappeared from the serum of three of the immune mothers after parturition. The results of these experiments do not indicate whether the young receive a passive immunity from the immune mother or whether they receive antibodies from the mother's milk.

Blood Changes and Antibody Production After Injection of Pneumococcus Lipovaccine.—Howell's work shows that after the injection of pneumococcus lipovaccine there was a slight rise in the polymorphonuclear leukocytes and in the eosinophils. There was a definite rise in agglutinin in three serums examined in from eleven to twelve days. The height of agglutinin titer was reached on the twenty-fifth, thirty-first and fifteenth days, respectively. The agglutinin titer remained high for No. 1 for three months (last observation); for No. 2 for six months (last observation); for No. 3 for nine months. Demonstrable agglutinin was present in seven persons for at least one year. Complement fixing antibodies were present in the serum of three men examined on the fourteenth, seventh and fifteenth days, respectively. The height was reached in twenty-five days, and all three serums showed some degree of fixation in the last test made on each serum. Protective bodies for pneumococcus types 1, 2 and 3 were demonstrable in some degree in the three serums at the time the agglutinin titer was high. There was no apparent correlation between the clinical history, the blood count, and the antibody content.

Streptococcus Hemolyticus Agglutinin.—The streptococcus considered by Howell appeared to be a typical *Streptococcus hemolyticus* when it was cultivated on blood-agar medium, but it had the peculiar quality of agglutinating instead of laking red blood cells when it was grown in broth medium. The tests noted suggest that the agglutinin for red blood corpuscles was an exogenous product of the bacterial cell and that hemolysin was probably present, but that its action on corpuscles, for some reason not determined, was inhibited by the agglutinin present. Agglutinin production was a transient quality of this streptococcus strain, since it was present in an appreciable amount for only six weeks.

Germicidal Tests with Gonococcus.—A new, practical and reliable method for making germicidal tests with the gonococcus as the test organism is presented by Davis and Swartz.

Determining Thermal Death Point.—A new method for determining the thermal death point of resistant spore-bearing bacteria at high temperature, which gives accurate results, is described by Bigelow and Esty.

Larygoscope, St. Louis

November, 1920, **30**, No. 11

Popular Fallacies in Practice of Otology. G. E. Shambaugh, Chicago.—p. 683.
Ethmoidal Problem. R. H. Skillern, Philadelphia.—p. 687.
Cavernous Sinus Thrombosis Following a Secondary Mastoidectomy. J. A. Robinson, New York.—p. 695.
Surgical Requirements of Nasopharyngeal Adenoid. J. W. Jervey, Greenville, S. C.—p. 697.
Control of Lung Abscess Following Tonsillectomy and Retropharyngeal Abscess. The Suction Dissector. C. B. Walker, Springfield, Mass.—p. 701.
Tonsil Facts. T. M. Stewart, Cincinnati.—p. 706.
Voice and Speech; A Neglected Medical Study. J. J. Levbarg, New York.—p. 711.
Fluoroscopic Bronchoscopy, Esophagoscopy and Gastroscopy. R. C. Lynch, New Orleans.—p. 714.
Infections Following Operations of Nose and Throat. H. Kunz, New York.—p. 717.
Difficulties Encountered in Removing a Peanut from a Bronchus. W. B. Chamberlin, Cleveland.—p. 719.
New Bronchoscope. A. E. Goodloe, Chattanooga, Tenn.—p. 723.
Sterilization for Atomizers, etc. I. F. Shapiro, New York.—p. 726.
Case of Carcinoma of Middle Ear. J. Guttman, New York.—p. 727.

Medical Record, New York

Dec. 25, 1920, **98**, No. 26

Influence of Radioactivity in Treatment of Hypertension. C. E. Field, New York.—p. 1051.
Hypothyroidism; Twenty-Six Years' Supplemental Thyroid Feeding. D. B. Hardenbergh, Middletown.—p. 1054.
Surgical Aspects of Pleurisy. J. F. Van Paing, Chicago.—p. 1057.
Pure Aphasias à Propos of Case of Pure Alexia. A. Gordon, Philadelphia.—p. 1059.
Bacterial Flora of Tuberculous Sputum. J. E. Strobel, Hartford, Conn.—p 1060.
Phimosis and Guillotine; New Instrument for Circumcision. C. T. Stone.—Brooklyn.—p. 1061.

Jan. 1, 1921, **99**, No. 1

*Injuries to Ankle Joint and Their Treatment. M. B. Cooperman, Philadelphia.—p. 1.
Roentgen-Ray Pathology. A. J. Pacini, Washington, D. C.—p. 6.
Logical Cause, Pathology and Treatment of Brain Lesions. A. Kahn, New York.—p. 8.
Psychiatry and Psychoanalysis. J. Smith, Brooklyn.—p. 11.
Gonorrhea in Women. A. Jacoby, New York.—p. 14.
*Hernia of Pleura Complicating Spontaneous Pneumothorax. H. E. Hale, New York.—p. 16.

Treatment of Ankle Joint Injuries.—In the treatment of muscular attachments, Cooperman says, the object should be to get rid of the effusion which separates the torn ends of tissues and so allow them to come into their proper position; also to prevent any movement of muscular effort from stretching or tearing the newly repaired tissues and so making the condition chronic. This is done by applying a pad of adhesive plaster over the effusion and a similar pad on the tendon just above the inflamed area, a bandage being applied over these. In chronic strains of this kind, treatment must be directed in encouraging a free flow of blood to and through this area. This is accomplished by massage and alternating applications of hot and cold water (contrast baths). In the treatment of chronic ankle sprains, where the foot has assumed positions of deformity, it is sometimes necessary to give an anesthetic, manipulate and break up adhesions, tenotomize contracted tendons, and bring the foot around to its normal relation to the leg. The foot is fixed in the correct position in a plaster-of-Paris cast. After a period of two or three weeks, the cast is removed and a light brace to restrain lateral movements is temporality applied or a pair of shoes are wedged and furnished with arch supports. These

cases should be baked and manipulated regularly for a time if they show any evidence of arthritis. All foci of infection in distant parts of the body must be searched for and treated.

Hernia of Pleura Complicating Pneumothorax. — Hale's patient was a man, 36 years of age. He had pulmonary tuberculosis with left, spontaneous pneumothorax. In the patient's back there was a semilunar tumor. It extended downward along the vertebral border of the left scapula, from a point about 8 cm. above the inferior angle, and upward and outward 9 cm. from the same angle. It was soft, compressible, though under some tension. To percussion it was resonant. It could be reduced almost entirely only to reform when pressure was removed. Coughing hastened the filling out and caused a perfectly plain impulse. This was evidently an air-filled, hernial sac of the pleura. This patient did not feel very ill and left after a few days in the ward. Hale has failed to find a similar case on record.

Michigan State Med. Society Journal, Grand Rapids

December, 1920, **19,** No. 12

Etiology of Bright's Disease. L. H. Newburgh, Ann Arbor.—p. 533.
Pathologic Physiology of Nephritis. A. R. Elliott, Chicago.—p. 533.
Therapeutics of Nephritis. W. E. Post, Chicago.—p. 539.
Epidermophytosis. R. C. Jamieson, Detroit.—p. 546.
Choice of Cataract Operation. W. R. Parker, Detroit.—p. 550.
Case of Acute Fibrinous Bronchitis. W. H. Marshall, Flint.—p. 552.
Treatment of Neoplasms. C. D. Brooks and W. R. Clinton, Detroit.—p. 553.
Present Status of Abdominal Cesarean Section in Michigan. A. MacKenzie Campbell, Grand Rapids.—p. 556.
Thyroid Glands: Metastasizing Effects. A. McLean, Detroit.—p. 558.

New Jersey Medical Society Journal, Orange

December, 1920, **17,** No. 12

Pulmonary Tuberculosis and Conditions Simulating It. S. B. English, Glen Gardner.—p. 401.
Gastrospasm; Clinical and Roentgenologic Study. J. Roemer, Paterson.—p. 405.
Diverticulosis of Cecum. M. W. Reddan, Trenton.—p. 409.
Ideals, Aims and Importance of an Academy of Medicine. C. B. Moulinier, Milwaukee, Wis.—p. 411.
Physician as Citizen. C. E. Humiston, Chicago.—p. 416.
Radium Burn of Vagina Resulting in an Ileovaginal Fistula. T. W. Harvey, Orange.—p. 418.
Uterine and Tubal Pregnancy Coexisting, Complicated by Miscarriage and Intraperitoneal Rupture. H. G. Macdonald and D. A. Curtis, Hackensack.—p. 418.
Thoracic Tumor Mistaken for Aneurism. H. I. Goldstein, Camden.—p. 419.

New Orleans Medical and Surgical Journal

December, 1920, **73,** No. 6

Most Probable Causes of Mental Diseases. C. V. Unsworth, New Orleans.—p. 193.
Dementia Praecox. E. McC. Connely, New Orleans.—p. 195.
Clinical Versus Laboratory Findings in Syphilis of Nervous System. C. S. Holbrook, New Orleans.—p. 199.
Paranoia and Allied Psychoses. W. J. Otis, New Orleans.—p. 203.
Senile Psychoses. H. Daspit, New Orleans.—p. 206.
Feeblemindedness. G. F. Roeling, New Orleans.—p. 209.
General Treatment of Nervous Disorders. L. L. Cazenavette, New Orleans.—p. 218.
Medicolegal Aspect of Insanity to Medicine. J. A. O'Hara, New Orleans.—p. 223.
Methods of Examination. L. V. Lopez, New Orleans.—p. 226.

New York Medical Journal

Dec. 25, 1920, **112,** No. 26

*Variation in Rate of Infant Mortality in United States Birth Registration Area. R. Pearl, Baltimore.—p. 1009.
Infant Mortality in Watertown, N. Y. I. W. Brewer, Watertown, N. Y.—p. 1014.
Unappreciated Agencies in Defective Development of Children. C. G. Kerley, New York.—p. 1016.
Mental Health of Child. C. E. Carter, Los Angeles.—p. 1018.
Lumbar Puncture in Diseases of Children. H. Apfel, Brooklyn.—p. 1021.
Middle Ear Disease in Children. J. Friedman and S. D. Greenfield, Brooklyn.—p. 1024.
Weak Foot in Child. H. Scheimberg, Brooklyn.—p. 1026.
*Congenital Megacolon (Hirschsprung's Disease). J. Popper, New York.—p. 1030.
Physical Signs of Pneumonia in Children. S. A. Blauner, New York.—p. 1032.
*New Site for Smallpox Vaccination. I. H. Goldberger, New York.—p. 1035.

Jan. 1, 1921, **113,** No. 1

Operation for Renal Calculi. H. A. Kelly, Baltimore.—p. 1.
Dangers to Life Associated with Cholelithiasis and Their Prevention. B. T. Tilton, New York.—p. 4.
Pathogenesis and Physiopathology of Gallbladder and Biliary Tract Lesions. V. A. Lapenta, Indianapolis.—p. 5.
Treatment of Salivary Fistulas by Massage and Hot Air. P. Kouindjy, Paris.—p. 8.
Gastric Ulcer and Cancer. J. W. Shuman, Sioux City, Ia.—p. 10.
Acid Gastritis. R. H. Rose, New York.—p. 12.
Mouth from a Gastroenterologic Viewpoint. L. H. Levy, New Haven, Conn.—p. 14.
Some Upper Abdominal Truths and Fallacies. M. Behrend, Philadelphia.—p. 17.
Cryptitis and Hypertrophied Papillae as Causes of Pruritus Ani. J. F. Saphir, New York.—p. 19.
Excision of Cancerous Rectum Through Vaginal Section. C. J. Drueck, Chicago.—p. 21.
Colon Injury in Nephrectomy. W. Van Hook, Chicago.—p. 23.
Soul of Consumptive. S. A. Knopf, New York.—p. 24.

Infant Mortality in United States Registration Area. — Pearl's paper is a first biometric survey of the infant mortality statistics of the recently established birth registration area, and is preliminary to certain analytical studies of the problem of infant mortality now in progress in the laboratory of the department of biometry and vital statistics of the school of hygiene and public health of Johns Hopkins University. A special preliminary analysis of the data for cities over 100,000 population, and the registration states, indicates that causes of death capable of administrative control are chiefly responsible for the variation observed in the infant mortality rate, while those causes of infant deaths which, for fundamental biologic reasons, are capable of being sensibly influenced or controlled at the present time by administrative measures, are a highly stable and constant factor, from community to community contributing little to the observed variability of the total infant mortality rate. In absolute terms, however, these causes of death not administratively controlled are responsible, roughly, for 40 per cent. of the total infant mortality in the communities discussed.

Congenital Megacolon in Twins.—One of twins, aged 4 days, was the subject of Popper's report. The other twin had died shortly before Popper arrived at the patient's home. However, from the previous history and from a superficial inspection of the dead twin, he was convinced that death was due to the same malady from which the live twin was suffering. From birth on the history was one of progressive intestinal obstruction, the symptoms and signs being identical in both cases up to the fourth day. Neither infant had passed meconium nor expelled flatus since birth, in spite of cathartics, enemas and various other measures. After the first day attempts at nursing were unsuccessful, and even water was not retained. Vomiting steadily increased and on the third day the vomitus consisted of black stained fluid. Weakness, loss of weight and distention soon became quite marked. On the fourth day the distention had assumed such proportions as to interfere with the cardiac action, with resulting cyanosis and, in the case of one of the twins, death. Inspection of the live twin revealed an infant practically in a moribund state, markedly cyanosed, the abdomen tremendously enlarged, breathing shallow, extremities cold, radial pulse imperceptible, heart rapid and feeble; temperature, 96 F. Popper experienced a slight difficulty in passing the anal sphincter, and after the thermometer was within the bowel it seemed that the gut was unusually roomy. Popper then withdrew the thermometer and in its place inserted a glass test tube about four and one half inches long and three eighths of an inch in diameter. This tube also had to be forced through the anal sphincter. Exerting considerable pressure on the distended abdomen, a large amount of fluid mixed with meconium and gas was expelled past the tube. This treatment was continued until the abdominal distention was almost completely reduced. The relief experienced by the infant was immediately apparent, the heart action improved, the cyanosis cleared up, the breathing became deeper, and within less than an hour water was retained by mouth and the baby even made an attempt to take the breast. The diagnosis was verified by fluoroscopic examination as well as by a roentgenogram made when the baby was 16 days old. The baby is now 28 weeks old. The only measures that have succeeded in keeping this baby comfortable thus far are a proper diet, an abdominal binder, and the daily use of saline or sodium bicarbonate irrigations assisted by abdominal massage.

New Site for Vaccination.—Goldberger uses the inner and back side of the arm as the ideal site for vaccination against smallpox to overcome the objection against a visible scar.

New York State Journal of Medicine, New York

December, 1920, **20,** No. 12

*Diagnosis in Sterility. E. Reynolds and D. Macomber, Boston.—p. 373.
Diagnosis of Cholecystitis and Indications for Cholecystectomy. A. E. Garrow, Montreal.—p. 381.
Abduction Treatment of Fracture of Neck of Femur. R. Whitman, New York.—p. 386.
*Value of Position in Operative Treatment of Inguinal Hernia. H. H. M. Lyle, New York.—p. 389.
Problems Encountered in Attempting to Apply Insurance Methods to Sickness Hazard. E. MacD. Stanton, Schenectady.—p. 390.
*Report of Committee on Compulsory Health and Workmen's Compensation Insurance of Medical Society of County of New York. E. V. Delphey, New York.—p. 394.

Operating for Sterility.—Reynolds and Macomber condemn strongly the far too common step of persuading a woman into an operation for the correction of an abnormality on the basis that it may be the cause of sterility, without having taken the trouble or acquired the skill to determine with such degree of accuracy as is at present possible whether this particular abnormality is or is not the cause of sterility which exists between her and her husband.

Position in Herniotomy.—Lyle operates with the patient in the customary dorsal position. On completion of this stage, the patient is placed in a position of relaxation with the limbs flexed and rotated inward. This relaxes Poupart's ligament and reduces the distance between the ligament and the conjoint tendon. The reduction in distance varies in different patients from 20 to 70 per cent., the average being 35 per cent. The approachment of these parts is further facilitated by raising the head and shoulders of the patient, which relaxes the rectus and the abdominal wall. In the slighter forms of hernia the gap is almost obliterated. In hernial operations done under local anesthesia this position aids in combating muscular tension. To insure relaxation during the period of healing, the position is maintained for at least seven days.

Compulsory Health and Workmen's Compensation Insurance.—The committee of which Delphey is chairman, recommends to the legislature the passage of certain proposed amendments to the Workmen's Compensation Law, and that the Medical Society of the County of New York oppose further health insurance bills, the scheme for "health centers" because the committee believes, as the result of a survey, that they are not needed.

Pennsylvania Medical Journal, Harrisburg

December, 1920, **24,** No. 3

Rectal Drainage for Pelvic Abscess. R. M. Entwisle, Pittsburgh.—p. 128.
Abdominal Drainage. A. E. Crow, Uniontown.—p. 129.
Cecal Stasis and Its Relationship to Appendicitis. R. J. Behan, Pittsburgh.—p. 130.
Appendicitis in Children; Study Based on Five Hundred Cases. E. G. Alexander, Philadelphia.—p. 135.
Outlook of Chronic Nephritis. J. M. Anders, Philadelphia.—p. 142.
Mastoiditis in Children. F. Krauss, Philadelphia.—p. 147.
Industrial Physician. J. W. Ellenberger, Harrisburg.—p. 151.
Tonsils Considered from Viewpoint of Specialist and General Practitioner. H. M. Goddard, Philadelphia.—p. 153.

Rhode Island Medical Journal, Providence

December, 1920, **3,** No. 12

Wider Use of Tuberculosis Clinics and Hospitals. E. Washburn, Providence.—p. 229.

Southern Medical Journal, Birmingham, Ala.

December, 1920, **13,** No. 12

Syphilis as Problem in Group Diagnosis. A. Keidel and J. E. Moore, Baltimore.—p. 857.
*Circulation in Infectious Diseases. G. Nelson, Richmond, Va.—p. 861.
Practical Importance of Effort Syndrome in Civil Practice. H. R. Carter, Birmingham.—p. 865.
*Diarrhea Resulting from Biliary Insufficiency. W. H. Lewis, Rome, Ga.—p. 868.
Herpetic Sore Throat. J. Zahorsky, St. Louis.—p. 871.
Yellow Fever: Its Distribution and Control in 1920. W. C. Gorgas, H. R. Carter and T. C. Lyster.—p. 873.
Relationship of Alcohol to Modern Health Ideals. E. L. Fisk, New York.—p. 880.
Laboratory Phase of Public Health Work. W. H. Seeman, New Orleans.—p. 885.
*Bone Tumors: Benign Bone Cysts and Osteitis Fibrosa. J. C. Bloodgood, Baltimore.—p. 888.
Rôle of Obstructive Lesions of Ureter in Production of Recurrent or Persistent Pyelitis. J. N. Baker, Montgomery, Ala.—p. 898.
Abnormal Uterine Bleeding. R. E. Wobus, St. Louis.—p. 902.
Fee Splitting. S. H. Hodge, Knoxville, Tenn.—p. 905.

Circulation in Infectious Diseases.—The indications for the use of atropin, Nelson states, are fairly definite. It should be used in that group of cases where the circulatory disturbances, such as fluctuating blood pressure, alternate flushing and pallor, or other symptoms indicate vagotonia. The result in this group of cases from the use of atropin in large enough doses, such as 1/50 grain hypodermically, every four hours, are quite as graphic as a speedy response to properly used digitalis. Strychnin has no place in the management of circulatory disturbances, except to the extent that it acts as a general muscular tonic. In all cases where rapid heart action is a conspicuous feature the ice bag over the precordium is indicated.

Biliary Insufficiency Causing Diarrhea.—Lewis's patients were all adults—in three instances with no antecedent digestive nor bowel disburbance of any moment, nor history in any way suggestive of glallbladder disturbance at any time in their lives; and in four never jaundice nor acute abdominal attacks. With no evident exciting factor they were taken within the course of a few days with abdominal uneasiness, rumbling and gas accompanied by frequent semiformed or semiliquid bowel movements. These increased to as many as from ten to fifteen in twenty-four hours and were absolutely indifferent to diet, fasting or medication. The stools were grayish and offensive, never a normal color and undigested elements were grossly evident. In spite of the intake of a reasonable amount of food, weakness and emaciation became rapidly marked, in several months as much as from forty to sixty pounds being lost. Consideration of the intestinal physiology in the original instance suggested to Lewis that the condition was due to perverted bowel digestion. Acting on this hypothesis, in the lack of all other reasonable evidence, the patient was given ox gall at regular periods with and after food. The result was immediate and remarkable. The bowel movements within forty-eight hours became of almost normal consistency, resumed a natural color, were reduced to two or three in twenty-four hours; all abdominal distress disappeared; and, in fact, the entire disturbances ceased. From 30 to 60 grains of ox bile was administered in twenty-four hours. The first patient could not for over a year discontinue the bile without the return of the diarrhea, at the end of which time she was lost track of. The recent cases are still on bile feeding.

Bone Tumors.—Bloodgood summarizes the salient features based on recent experience with benign bone cysts and osteitis fibrosa and describes especially the differential diagnosis at the exploratory incision. The paper is supplementary to one published in 1910 and two critical reviews made by the author since 1899.

Tennessee State Medical Ass'n Journal, Nashville

December, 1920, **13,** No. 8

Hodgkin's Disease; Case of Pel-Ebstein Type. W. H. Cheney and F. B. Bogart, Chattanooga.—p. 281.
Tuberculous Salpingitis. P. H. Wood, Memphis.—p. 286.
When Should a Total Hysterectomy Be Performed in Preference to Subtotal Operation? W. T. Black, Memphis.—p. 289.
Passing of Country Physician. I. A. McSwain, Paris.—p. 292.
Twenty Cases of Foreign Body in Trachea and Esophagus. H. Wood, Nashville.—p. 295.
State Care of Insane. W. S. Farmer, Nashville.—p. 297.
Traumatic Musculospiral Paralysis Complicating Fracture of Humerus. J. L. Crook, Jackson.—p. 303.
Dentigerous Cyst of Mandible. R. W. Grizzard, Nashville.—p. 308.
Lethargic Encephalitis. C. C. Turner, Memphis.—p. 309.

West Virginia Medical Journal, Huntington

December, 1920, **15,** No. 6

Some Points in the Physical Examination for Pulmonary Tuberculosis. J. W. Moore, Charleston.—p. 201.
Medical Education Provided by State of West Virginia. J. N. Simpson, Morgantown.—p. 205.
Approved Modern Methods of Anesthesia. L. D. Norris, Fairmont.—p. 212.
The Pre-operative and Postoperative Treatment of Prostatic Hypertrophy. J. C. Matthews and R. M. Bobbitt, Huntington.—p. 216.
A Thousand Babies. C. H. Maxwell, Morgantown.—p. 218.
Hydatidiform Degeneration; Report of Case. C. S. Fleming, Fairmont.—p. 223.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Dec. 11, 1920, **2**, No. 3128

*Diagnosis of Acute Abdominal Crises. A. H. Burgess.—p. 877.
*Study of Heart Disease. F. J. Poynton.—p. 882.
*Effect of Pregnancy on Size and Weight of Some Organs of Body. P. T. Herring.—p. 886.
Risks After Operation for Tonsils and Adenoids in Outdoor Clinics. E. W. Williams.—p. 887.
Diagnosis of Hydatid Disease of Lung. A. Foster.—p. 887.
Volvulus of Small Intestine Following Ileocolostomy. N. Duggan. —p. 889.
Transposition of Viscera in Two Members of One Family. S. L. Brimblecombe.—p. 889.
Pregnancy After Ligature of Fallopian Tubes. A. N. McArthur. —p. 890.
Superiority of Sodium Antimony Tartrate to Emetin in Bilharziasis. A. H. Harkness.—p. 890.
Disappearance of Radial Pulses During Inspiration. W. Edgecombe. —p. 890.

Diagnosis of Acute Abdominal Crises.—Burgess maintains that inasmuch as surgical technic has now reached such a high level of efficiency that further improvement therein cannot be relied on to better the statistical results of the surgical treatment of acute abdominal crises—such can be obtained only by earlier diagnosis on the part of the general practitioner permitting the application of such treatment at an earlier stage. The time that has elapsed between the onset of the attack and the opening of the abdomen is the real deciding factor in the ultimate issue of the case—far more so than the skill of the individual surgeon. Burgess says he infinitely prefers to meet in consultation the practitioner whose diagnosis, made in the early hours of the attack, is limited to "something gone seriously wrong in the belly," than he who, forty-eight hours later, can give a correct description of what an operation will reveal.

Study of Heart Disease.—Heart disease in the young Poynton says is the first step in the study of heart affections. All the skill and science devoted to the perfection of cardiac tonics will never make them more than heart splints; and no drug, short of one that will replace scar by healthy tissue, will ever do more than support the heart. It is to prevention that we are bound to turn—a task of much difficulty in the case of rheumatism, but with great possibilities which have not been thoroughly explored. The disease as seen in hospitals is infrequent in the well to do, and this points to careful systematic inquiry into housing and clothing and school influences. Had the same energy been expended on acute rheumatism as has been on tuberculosis and venereal affections, Poynton believes the study of heart disease would have already made substantial progress. When we are studying heart disease in childhood we are dealing with it at a stage which holds out much greater hope than later in life. If we can do good then, it may well be permanent good. Failing this, if we can prevent advance of the infective processes, we know that with increasing years the infective phase becomes less frequent. In the case of rheumatism the incidence is most frequent between the seventh and ninth years, and then it begins to decline, though still far too rifle through late childhood and adolescence.

Effect of Pregnancy on Viscera.—In the healthy albino rat which was the subject of Herring's study, the occurrence of pregnancy has little effect on the length and weight of the body, excluding the increase of weight due to the uterus and its contents. The heart, kidneys, and spleen are little affected; there is certainly no enlargement of the heart in pregnancy. The liver is greatly enlarged. The thymus undergoes rapid involution and is much diminished in size. The suprarenals are slightly hypertrophied. The thyroids are diminished in size in pregnancy, and there is a notable diminution in the weight of the pituitary, attended by histologic changes.

Glasgow Medical Journal

December, 1920, **12**, No. 6

Physiology: Institutes of Medicine. D. N. Paton.—p. 321.
Diagnostic Hints. R. Fullerton.—p. 330.
Scurvy Among Adults in Glasgow. W. J. Richard and W. D. Mackinnon.—p. 336.
Tonsil and Its Function. J. Harper.—p. 344.

Journal of Neurology and Psychopathology, London

November, 1920, **1**, No. 3

*Psychology and Medical Curriculum. C. L. Morgan.—p. 211.
Epidemic Encephalitis. T. Horder.—p. 221.
Mental Effects of Lethargic Encephalitis. G. Parker.—p. 223.
Lethargic Encephalitis. J. O. Symes.—p. 226.
An Impression of Lethargic Encephalitis. N. Neild.—p. 227.
"Epidemic" Encephalitis. C. Coombs.—p. 230.
Cases of Lethargic Encephalitis. S. J. Kerfoot.—p. 232.
Case of "Epidemic" Encephalitis. F. H. Rose.—p. 233.
Case of Lethargic Encephalitis. S. A. Tidey.—p. 235.
*Education and Its Rôle in Prevention of Neuroses. J. E. Nicole. —p. 236.
*Familial Tabes Dorsalis. J. Le F. Burrow.—p. 246.

Value of Psychology in Medical Curriculum.—Man is not only a complex physiologic system, but an equally complex psychical system—conscious, but with unconscious foundations; the medical practitioner has to deal with the man as a whole; therefore, Morgan says, in current practice some knowledge of psychology is of real value; in specialized practice it is essential. The time has come to consider whether the psychologist should not have a status on the staff of a medical school analogous to that of the physiologist. Some adequate instruction should be given to all medical students, not too early, say after they have been well grounded in physiology; and that more should be given to specialists toward the close of their curriculum, or in a postgraduate course. The work should be given by a psychologist who has been trained not only in a school of philosophy but also in a school of biology. He must not be out of touch with his colleague, the physiologist. He must know not only about the emotions but about internal secretions. And he must have adequate acquaintance with the manner in which what he teaches shall be applied in the practice of the profession. If he himself be a member of the profession, so much the better; but he must be a psychologist.

Education to Prevent Neurosis.—Nicole points out that from an educational point of view, the importance of the unconscious mind should be appreciated; its characteristics in the different types of psychologies; the significance of the primitive tendencies responsible for the faulty repressions, the signs of which must be recognized; the normal and abnormal developments of child mentality and their influence on adult character; and finally, the necessity for an individual and rational education that will help to close the wrong paths, and open up the right ones for the various sublimating processess essential to human progress and development. Moreover, it is not enough for a few people to become versed in analytical psychology in order to correct in children the faulty influences of an ignorant home education; for it is only when every one is acquainted with the psychic principles that will help toward the avoiding of developmental errors, that we may cease to do harm and perhaps do a little good.

Familial Tabes Dorsalis.—Of six surviving members in a family of eight, born of healthy parents, four have acquired undoubted syphilis from various different sources, with a resulting tabes dorsalis in all. A fifth member of the family acquired gonorrhea (syphilitic infection being doubtful), and probably has early tabes dorsalis. A sixth escaped venereal infection and remains healthy. It is suggested by Burrow that tabes dorsalis cannot be attributed to a special strain of spirochete introduced at the initial infection, but is much more likely to be due to the spirochete acting on tissues specially sensitized, either by natural family peculiarity or by certain methods of treatment.

Medical Journal of Australia, Sidney

Nov. 13, 1920, **2**, No. 20

Operative Treatment of Hemorrhoids. C. E. Corlette.—p. 449.
Ulnar Paralysis Following Indirect Violence Through Feet. K. Byrne. —p. 457.

Nov. 20, 1920, **2**, No. 21

Heart Action and Murmurs. J. M. Gill.—p. 469.
Epithelioma of Lip. P. A. Stevens.—p. 472.
Three Cases of Intestinal Obstruction. A. Aspinall, Sydney.—p. 475.

Tubercle, London

December, 1920, **2**, No. 3

Coordination of Statistics of Tuberculosis Institutions. N. Robertson. —p. 97.
*Suggested Classification of Tuberculosis. W. B. Knobel.—p. 110.

Classification of Tuberculosis.—The classification suggested by Knobel is based on the presence or absence of tubercle bacilli in the sputum and the presence, absence and extent of moist sounds (crepitations).

Archives des Maladies du Cœur, etc., Paris

August, 1920, **13**, No. 8

*Spontaneous and Induced Variations in Beat with Heart Block. R. Lutembacher.—pp. 337-345.
*Erythremia with Inherited Syphilis. E. Schulmann and Weismann.—p. 354.
*Blood Pressure in Arteriosclerosis. W. Janowski (Warsaw).—p. 358.

Variations in the Rhythm in Heart Block.—Lutembacher gives some tracings to show the spontaneous variations possible with incomplete heart block. The rate may suddenly increase or slow down, although the dissociation persists unmodified. Toxic action or disturbance in circulation or nourishment is the probable explanation.

Action of Epinephrin in Heart Block.—Lutembacher found that the heart beat became accelerated at once after intravenous injection of epinephrin in two cases of complete heart block, but the block itself was not modified. After the period of acceleration, the beat was extremely retarded for several days. He noted also that the accelerated ventricle beat was often interrupted by long pauses followed by syncopes.

Vaquez' Erythremia with Inherited Syphilis.—The man of 40 showed symptoms of mild hyperthyroidism when the erythremia developed, and he as well as his ten brothers and sisters presented more or less signs of inherited syphilis. Under a course of neo-arsphenamin the numbers of red corpuscles rapidly declined from 12 million to less than 6 million, while the leukocytes kept at about the same figure, 8,000. The general condition improved also at the same time.

The Blood Pressure with Arteriosclerosis and Nephritis.—Janowski recorded the blood pressure in 200 patients with arteriosclerosis but no signs of nephritis; in 100 with nephritis but no signs of arteriosclerosis, and in 50 with both nephritis and arteriosclerosis. He regards 120 mm. mercury as the upper limit of normal pressure, and states that in 38 of the 200 with arteriosclerosis alone the maximal pressure ranged from 120 to 140, and was above this, up to 240 mm., in 107. In only 55 was the pressure within normal range, and in all but 3 in this group there were signs of disease of the heart muscle. In these 3 endocrine disturbance was probably responsible for the low pressure. External factors, tobacco, alcohol, lead and other poisonings, and chronic infections or acute infections after middle age, and factors of internal origin, such as nephritis, diabetes, hyperfunctioning of any of the endocrine glands, prolonged severe digestive disturbance, overeating and improper food, all contribute to a stable or transient rise in the blood pressure and exaggeration of the work of the heart. These mechanical causes all raise the blood pressure, and this rise in the blood pressure is the only ultimate cause of arteriosclerosis, and hence is often the first of its symptoms.

Bulletins de la Société Médicale des Hôpitaux, Paris

Nov. 5, 1920, **44**, No. 33

Amyotrophic Encephalitis. Sicard and Paraf.—p. 1289.
Radioscopy of Aneurysm of Abdominal Aorta. C. Laubry.—p. 1293.
Venous Thrombosis in Chronic Hemorrhagic Conditions. P. E. Weil and M. Bloch.—p. 1295.
*Benzoin Precipitation Reaction in Syphilitic Cerebrospinal Fluid. G. Guillain, G. Laroche and P. Lechelle.—p. 1299.
*Hypertrichosis with Psychopathy Laignel-Lavastine and A. Boutet.—p. 1303
Megaesophagus from Cardiospasm. M. Villaret et al.—p. 1314.
Improved Staining Technic with Polyeosinate of Methylene Blue. A. Cretin.—p. 1320.
Gangrenous Sore Throat Rapidly Cured with Antigangrene Serum. L. Tixier.—p. 1323.
Gangrene of Lung Rapidly Cured with Antigangrene Serum. Houzel and Sevestre.—p. 1325

Benzoin Spinal Fluid Test.—Guillain and his co-workers describe the technic for a simple benzoin precipitation test for pathologic cerebrospinal fluids. The reaction has nothing to do with the albumin or the cellular elements of the cerebrospinal fluid, but it always paralleled the Wassermann reaction in their numerous tests except in one case of brain tumor and in two cured cases of syphilis. A set of five tubes with one control tube is all that is necessary. In the first tube is placed 0.25 of a 1:1,000 solution of sodium chlorid; in the second, 0.5 c.c. and in the third, 1.5 c.c.; in all the others, 1 c.c. To the first tube is then added 0.75 of the spinal fluid, and to the second and third tubes 0.5 c.c. Then 1 c.c. of the mixture in the third tube is transferred to the fourth tube, and after thorough mixing by aspirating it several times with a pipet, 1 c.c. is transferred from the fourth tube to the fifth tube. Then 1 c.c. is drawn out of the fifth tube and thrown away. The suspension of 1 gm. of benzoin in 10 c.c. of alcohol is set aside for forty-eight hours. Then 0.3 c.c. of the supernatant fluid is transferred to a tube with 20 c.c. of distilled water, and the whole is heated to 35 C. This insures an extremely homogeneous suspension, and 1 c.c. of this is added to each of the six tubes. The decisive precipitation occurs in from twelve to twenty-four hours at room temperature. The reagents and distilled water must be freshly prepared. With syphilitic spinal fluid the colloidal benzoin is completely precipitated.

Hypertrichosis with Virilism and Psychopathy.—Extensive tests of endocrine functioning were made in the two cases reported in which the women presented full beards and the hypertrichosis involved nearly the entire body. It seemed to have some connection with exophthalmic goiter in one, and it had developed at puberty in the other. Both of the women were feebleminded, with periodical depression. The responses to the endocrine tests suggested ovarian insufficiency with secondary excessive suprarenal functioning.

Journal de Radiologie et d'Electrologie, Paris

August, 1920, **4**, No. 8

Fractures of Head of Radius. Laquerrière and Delherm.—p. 337.
*Volvulus of the Stomach. D. Rosselet.—p. 341.
Radioscopic Control of Bone Peg Fixation. F. Tribout.—p. 350.
Electrodiagnosis. Laquerrière and Delherm.—p. 353.
Radiotherapy in Germany, 1914-1919. I. Solomon.—p. 358.
Diaphragmatic Hernia. P. Aimé.—p. 365.
Galvanic Electric Treatment of Goiter. Drevon.—p. 368.

Volvulus of the Stomach.—Rosselet relates that in examining a woman on three separate occasions, the roentgen rays showed once that the stomach had become twisted on its axis. This was spontaneously corrected, having evidently been brought about by abdominal meteorism. The torsion had not quite reached the point where acute symptoms would have been produced, but the torsion persisted during the three hours the woman was being examined. He reproduces the puzzling shadow cast by the twisted organ.

Lyon Chirurgical

September-October, 1920, **17**, No. 5

Surgery of Lower Portion of Bladder. Rochet.—p. 541.
*Fractures at Base of Neck of Femur. P. Santy and G. Aigrot.—p. 553.
Pathologic Anatomy and Pathogenesis of Congenital Occlusion of Small Intestine. P. Rochet and P. Wertheimer.—p. 561.

Fractures at Base of Neck of Femur.—Santy and Aigrot emphasize the difference in the lesion when the fracture occurs in the robust and in the elderly. In the latter the fracture at the base of the neck is accompanied with injury of the trochanter, as a rule, instead of the clean cut fracture common in more vigorous subjects. Treatment has to be different; the screw inserted axially in the neck up into the head, which answers its purpose so admirably with fracture otherwise, cannot be applied in these neck trochanter fractures with extensive fissure or splitting of the trochanter. But the condition can be improved by continuous traction, applied under spinal anesthesia, the traction maintained by immobilization in a plaster cast embracing pelvis, back and foot, holding the limb in slight abduction, preventing coxa vara and the outward rotation of the foot which otherwise compromise the results of treatment of this form of fracture.

Lyon Médical

Nov. 10, 1920, **129**, No. 21

*Obesity in Children. G. Mouriquand.—p. 883.
Purpura as Sign of Septicemia in Cerebrospinal Meningitis. S. Bonnamour.—p. 893.
Recent Swedish Legislation on Venereal Diseases. L. M. Bonnet.—p. 916.

Obesity in Children.—Mouriquand warns to be on the alert to detect incipient obesity in the children of the obese, the diabetic, and the arthritic or gouty. When the mother is glycemic the fetus, floating in an actual sugar syrup, may become obese, and this entails dystocia. Experience has demonstrated that with early, inherited obesity nearly all develop diabetes before 40, but only about 50 per cent. when the inherited obesity does not develop till late, and only 15 per cent. when the obesity is acquired. After puberty, if the obesity declines, the outlook is favorable, at least to 35 or 40. But if the endocrine glands show insufficiency, progressive dystrophy may be anticipated. Obesity in the parents should be combated; especially during pregnancy the diet should be supervised. Overfeeding and sedentary habits in the family may render it necessary to remove the child to another environment where he will be stimulated to physical exercise. Organotherapy is indicated in certain cases. For example, a girl at puberty threatened with the adiposogenital syndrome may be given thyroid, ovarian and pituitary treatment in turn for ten days each, or the three may be combined. Or potassium iodid might be given for ten days each month (10 or 20 cg. daily).

Paris Médical

Dec. 11, 1920, **10**, No. 50

*Acute Paroxysmal Hypertension. H. Vaquez.—p. 433.
*Mercury Colic. G. Milian.—p. 437.
Spirochetal Jaundice in a Child. E. Lesné.—p. 443.

Acute Paroxysmal Rise of Blood Pressure.—This is encountered, Vaquez explains, in lead poisoning, in the course of eclampsia, and in a tabetic visceral crisis. In lead poisoning, the retraction of the liver in the course of the lead colic, the collapse of the arteries in the papilla, and the lack of organic lesions at necropsy all point to vasoconstriction and arterial hypertension as the cause of the disturbances. We can trace the course of the lead poisoning with sphygmomanometer in hand, and foretell the imminent encephalopathy when the pressure rises. Sudden amaurosis, transient aphasia and convulsions can occur in both acute and chronic lead poisoning, before any organic lesion has developed, solely from the effect of the vasoconstriction and rise in blood pressure. The albuminuria of pregnant women and their acute insufficiency of kidneys and liver are all causally linked with the other phenomena of eclampsia. Like the amaurosis, transient aphasia and convulsions, they result from sudden and profound modifications of the circulation induced by the arterial hypertension. The latter is the major symptom which dominates all others, and measures for prevention and treatment of eclampsia must aim to keep the blood pressure normal or bring it down to normal.

Mercury Colic.—Milian called attention in 1907 to the symptoms in chest or abdomen resembling pneumonia or peritonitis which are manifestations of general poisoning from mercury. The mercury colic generally comes on suddenly or may be preceded by weakness in the legs, pain in stomach and kidney region, a small dry cough, anorexia and headache, with much thirst. There may also be nausea and a tendency to syncope, pallor and subjaundice. These symptoms increase in intensity, and in twenty-four hours the "thorax colic" becomes installed. If the physician consulted is not aware of the mercury being taken (and the patient frequently conceals this), he is liable to be led entirely astray. As auscultation and percussion are negative, he may diagnose influenza. In one case a uremic attack was diagnosed and treated, and in another case amebic dysentery seemed the only explanation for the symptoms. In one case the abdomen was opened on account of the intense pain in both flanks, the only symptom except the fetid breath. The viscera were found clinically normal, but hysterectomy was done as there were traces of annexitis. The mercury colic reaches its height in one day and subsides completely by the third, fourth or fifth day, passage of stool completing the recovery, as with lead colic. Mercury colic is an acute poisoning of the chromaffine system, often favored by massive absorption of the drug owing to horseback riding, a long walk or similar muscular exertion, on a basis of preexisting suprarenal deficiency. Treatment should include an abundant diet, regardless of the anorexia, as the mercury forms insoluble albuminates; etc., with the albuminoid elements of the food. The physical depression requires bed rest, and the pain, sedatives. A full daily bath at body temperature for half an hour is one of the best means to relieve the pain while it promotes diuresis and elimination of the mercury by the kidneys and skin. Purgatives should not be given, as they merely increase the pains, but a belladonna and opium suppository may be useful. The main indication is to give epinephrin, 20 drops of the 1:1,000 solution three times a day in a little water. In resuming the mercury, smaller doses and by another route should be preferred, with intervals not less than seven days, giving calcium salts with it, and 40 drops of the epinephrin solution daily.

Progrès Médical, Paris

Oct. 30, 1920, **35**, No. 44

*Lethargic Encephalitis. A. Hanns.—p. 473.
Lecture on General Paresis. Laignel-Lavastine.—p. **474**.

Lethargic Encephalitis.—Hanns reports from Strasbourg a case of what he thinks is a new form of epidemic encephalitis. The young woman developed first what seemed to be an infectious sore throat with an eruption on the limbs and intense meningeal reaction but no pronounced lymphocytosis in the spinal fluid. Intense conjunctivitis with edema and ptosis of the lids and double bronchopneumonia completed the clinical picture. The temperature was only slightly above normal and the pulse was quite normal. The agitation at first was followed by somnolency, with recovery in two weeks.

Revue Franç. de Gynécologie et d'Obstét., Paris

July, 1920, **15**, No. 7

*The Parturient Muscles. L. Demelin.—p. 289.

The Parturient Muscles.—Demelin analyzes the different ways in which the muscles involved in childbirth can manifest insufficiency.

Revue Médicale de la Suisse Romande, Geneva

November, 1920, **40**, No. 11

*Etiology of Goiter. W. Boitel.—p. 717.
*Famine Osteomalacia. A. Cramer and P. Schiff.—p. 746.
Tardy Jaundice After Arsphenamin Treatment in Three Nonsyphilitics. J. Golay.—p. 764.
Epidemic of Ringworm Due to Microsporon Lanosum. Cornaz.—p. 767.

Etiology of Goiter.—Boitel has been studying the records of goiter for thirty years at the public hospital at Lausanne, listing 1,308 cases, with their geographical distribution, heredity, and comparison with the incidence of typhoid. Goiter is thus shown to be more prevalent in the plains and valleys than in the mountain districts, especially the plain of the Rhône. Heredity was manifest in 47 per cent. of the cases. The people long residing in the district do not seem to be more or less affected than the comparative newcomers. His research failed to show that lack of iodin in the air is the cause of goiter, and no treatment to date seems to be an actual causal treatment. The history and an extensive bibliography of goiter are given.

Famine Osteomalacia.—Cramer and Schiff report the details of a case of changes in the bones resulting from dietetic privations, the woman in question having been in Russia for the last two years. The changes are not very profound in these famine osteomalacia cases, as they subside in a few weeks under nourishing food, calcium and phosphorus.

Schweizerische medizinische Wochenschrift, Basel

Nov. 18, 1920, **50**, No. 47

*The Bases of Hormone Therapy. L. Asher.—p. 1057.
*Relations Between Blood and Organs. K. Kottmann.—p. 1060.
*Cancer Mortality at Basel. Jessen.—p. 1064.
The Latest Methods for Testing Blood Pressure. S. Hediger.—p. 1073.

The Bases for Hormone Therapy.—Asher recalls that the hormones, not being colloids, are able to pass rapidly into the blood and thence into the cells, while the lack of a ferment or protein nature deprives them of any action as antigens. Our knowledge of the suprarenal hormone is most complete, but we are learning much about the hormone of the thyroid, which Kendall defines as a triple iodized derivative of indol. Abelin and Abderhalden have demonstrated the full potency of the action on metabolism of thyroid preparations freed from every

trace of albumin. Organotherapy and hormone therapy are not identical, as with the former there is ballast which may induce undesired reactions. All the hormones can be injected by the vein, but it is fortunate that the thyroid and pituitary hormones exert their action by the mouth also. Clarke has reported exceptional production of eggs in hens given the pituitary hormone in their feed. Another factor that has to be considered is what might be called the humor or mood of the organism. The same dose acts on the same organ differently at different times. Some light has been thrown on this apparent mystery by Magnus' demonstration that weak doses of atropin stimulate or inhibit peristalsis according to the proportion of cholin in the bowel wall at the moment. By regulating the cholin content we can regulate the action of the atropin. Cholin is a specimen of what might be called the individual hormone. It may have other actions, but to date only one action has been discovered, namely, its control of the automatic movements of the bowel by its influence on the ganglia of the mesenteric plexus. The thyroid or pituitary hormone reenforces the suprarenal hormone, while the pancreas hormone has an antagonistic action. "Removing the organ producing the hormone may be called negative hormone therapy. . . . In hormone therapy we are adopting Natures' most secret methods."

Relations Between the Blood and the Organs.—Kottmann states that different serums display a difference in the degree of dispersion which they permit on addition of a colloid. He estimates this by generating in the serum a colloid silver iodid. The serum is then exposed to the light and hydrochinon added. The fluid turns brown or black by a kind of developing process, and the rapidity and intensity with which this occurs form an index of the degree of dispersion of the colloid. With serum from exophthalmic goiter patients, the dispersion is extreme while with ordinary goiter there is very little dispersion. Similar differences are found in other pathologic conditions. With cancer of the liver, the dispersion was twenty-four times as intense as with normal serum in his tests of fifty-one cancer cases and 159 controls. Another illustration of the relations between the blood and the organs is the exceptionally abundant elimination of creatin in exophthalmic goiter. As guanidin is readily formed from creatin, this may explain certain symptoms. When guanidin accumulates in blood and tissues from derangement of the normal balance between the thyroid and the parathyroids, tetany is almost inevitable.

Cancer Mortality in Switzerland.—In this long statistical communication, with comment, Jessen shows that the death rate per thousand inhabitants at Basel in the last fifty years has declined from 23.25 to 12, but the cancer death rate has increased from 0.86 to 1.31. The proportion of deaths from cancer in relation to the total mortality has increased from 3.69 to 10.90 per cent. Cancer of the stomach outranks about fivefold all other cancers at Basel, and about threefold throughout the whole of Switzerland.

Annali d'Igiene, Rome

July, 1920, **30**, No. 7

*Choleraic Peritonitis of Guinea-Pigs. G. Sanarelli.—p. 381.
Serologic Findings in Typhus. G. Ficai.—p. 395.
Action of Electric Current on Agglutinating Serums. P. Zannelli.—p. 405.
*History of Typhus. A. Ilvento.—p. 407. Conc'n.
Hygiene of Exercise. V. Puntoni.—p. 415.

Pathogenesis of Cholera.—In this second report of experimental and clinical research on cholera, Sanarelli relates that guinea-pigs dying after injection of cholera vibrios into the peritoneum, do not succumb to the local process, the peritonitis. This is found partially or entirely healed when the animals are not slaughtered at once. The cause of death has to be sought elsewhere.

History of Typhus.—Ilvento's long historical sketch of typhus presents evidence to show that the Italian internists of the sixteenth century had noted that typhus was transmitted only by direct contact, different from plague and other diseases, and that the epidemics occurred only in certain social environments. The descriptions of the disease in that early day are as perfect as could be written today. Only three new facts have been added: the pathologic anatomic finding of the endaortitis of the small vessels; the share of the louse, in transmission, and the diagnostic Weil-Felix proteus reaction.

Chirurgia degli Organi di Movimento, Bologna

October, 1920, **4**, No. 4

*Malformation of Cervical Spine. M. Bertolotti.—p. 395.
"Circulation in Isolated Nerves." G. Anzilotti.—p. 500.

Congenital Anomalies in the Cervical Spine.—This whole issue of *Chirurgia* is devoted to the clinical description and roentgen-ray findings in eighteen cases of congenital malformation of the spine in the neck. Fourteen presented such an identical clinical and roentgenoscopic picture, with fusion of the atlas and the occiput, that this seems to form a morphologic entity with a distinct clinical and anatomic physiognomy. Eight different groups of malformation were represented in the total eighteen cases, as Bertolotti shows by his eighty-four illustrations. One case of congenital torticollis showed ossification of some of the deep muscles in the neck. In another case multiple anomalies along the whole course of the spine associated with regional malformations confirms Putti's theory in regard to the segmental development of anomalies in connection with malformation at different parts of the spine.

Pediatria, Naples

July 1, 1920, **28**, No. 13

*Chloroma in Children. E. Mensi.—p. 593.
Changes in Composition of Blood in Influenza. G. Milio.—p. 627.

Chloroma in Children.—Mensi reports the details of three cases in children, 21 months and 4 years old, and tabulates from the literature 46 cases in children from 1 to 14. Lehndorff states that 50 per cent. of cases of chloroma are in children. The records show that the children are usually otherwise healthy, with normal parents. No connection with trauma has been discovered. Chloroma is a systemic disease which evidently belongs in the group of leukemias, and may reproduce any one of six different types of leukemia. He concludes his long study of the subject by reiterating that the etiology is still a mystery, the prognosis grave, and all treatment ineffectual.

Policlinico, Rome

Nov. 15, 1920, **27**, No. 46

*Pulmonary Syphilis. T. Pontano.—p. 1299.
Reliability of Sachs-Georgi Reaction. P. F. Zuccola.—p. 1306.
Double Uterus plus Double Vagina. E. Gallo.—p. 1308.
*Transverse Presentation in Twins. T. Lazzarini.—p. 1311.
When Umbilical Cord Does Not Drop Off. E. Bellandi.—p. 1311.

Pulmonary Syphilis.—Pontano calls attention to an instructive case in a man of 23 with remittent fever for four months. The intense leukocytosis, traces of peripheral facial paralysis and slight enlargement of the spleen cast doubt on the findings at the right apex which seemed to indicate a considerable tuberculous lesion. The course of the case confirmed that this lesion was a syphilitic gumma and it retrogressed completely in three weeks under arsphenamin and mercury.

Transverse Presentation in Twins.—Lazzarini relates that twice in the course of three weeks he had the responsibility of delivering an elderly primipara, twin sisters, with the fetus in irreducible transverse presentation. In both cases decapitation was impossible and evisceration of the fetus was the only means to deliver the women after long ineffectual labor.

Riforma Medica, Naples

Oct. 9, 1920, **36**, No. 41

*Influence of Food on Metabolism. S. Corinaldesi.—p. 925.
*Infections and Diabetes. G. Castronuovo.—p. 927.
*Ether by the Rectum. V. Aloi.—p. 931.
Congenital Anomaly of the Intestine. B. Polettini.—p. 934.
*Test for Formaldehyd in Urine. E. Pittarelli.—p. 936.
Present Status of Yellow Fever. I. Iacono.—p. 937.

Modification in Nitrogen Metabolism from Nature of Food.—Corinaldesi applied the Bang micromethods and found it possible to follow the changes in the intermediate and external metabolism from hour to hour. He thus established a curve of metabolic disintegration and catabolic elimination of the nitrogenous substances introduced in the food. The minute details in four cases are recorded, and the practical

conclusion emphasized that as the urea content of the blood and urine fluctuates within such a wide range in normal conditions during the hours of digestion, the clinical record of the intermediate and external metabolism should be taken always fasting and at least seven or eight hours after a meal.

Infections and Diabetes.—Castronuovo has been impressed with the fact that in the hundreds of diabetics he has encountered in his twenty-five years of practice, over 50 per cent. had a history of chronic and possibly latent infections. Treatment of these infections often had a remarkable mitigating effect on the diabetes, especially treatment for malaria, tuberculosis or syphilis. He ascribes the exceptional prevalence of diabetes in southern Italy to the malaria and tuberculosis factors. These damage the liver and pancreas and thus predispose to diabetes. It often seems as if the tuberculosis had become installed secondarily, when in reality it preceded the diabetes, prepared the soil for it, aggravated it after its development, and finally flared up virulently itself in the weakened organism.

Ether-Oil by the Rectum.—Aloi relates that only rarely was he able to induce profound anesthesia in dogs injected with ether-oil by the rectum. There was always superficial inflammation of the rectal mucosa or a special dryness, with inclination to bleed readily, and frequent desires to defecate, with bloody diarrhea. These changes in the intestinal wall are transient when the anesthesia is of brief duration and if the oil mixture is carefully rinsed out afterward. The epithelium did not seem to be altered.

Test for Formaldehyd Derivatives in the Urine.—Pittarelli describes a very sensitive color test for hexamethylenamin or other derivative of formaldehyd in the urine. It calls for a 1 per cent. solution of phenylhydrazin, and a 1 per cent. solution of the photographic developer metol (methylparamidophenol). To 25 c.c. of the urine are added 10 drops of the phenylhydrazin solution and it is heated to 100 C. It is then set aside for a few minutes, and then 5 drops of the developer and 3 drops of a 25 per cent. solution of sodium hydroxid are added. The fluid turns scarlet when formaldehyd is present. Adding a saturated solution of magnesium sulphate, turns it blue.

Oct. 23, 1920, **36,** No. 43

Cystic Adenoid Epithelioma. L. Torraca.—p. 974.
*Case of Anthrax. L. Martinotti.—p. 976.
*Percussion of the Kidneys. F. Galdi.—p. 978.
Acute Postoperative Dilatation of the Stomach. E. Marsili.—p. 982.
*Catheter in Peritoneum. S. Rolando.—p. 984.
Modern Views on Prolapse of the Rectum. E. Aievoli.—p. 986.
*Cancer of the Mouth. B. de Vecchis.—p. 987.

Anthrax.—In the case illustrated the large, symmetrical carbuncles on the wrists of the farmer of 53 subsided under local treatment with 1 per cent. phenol. The fever dropped the fourth day.

Percussion of the Kidney.—Galdi has found percussion at the back extremely useful in cases of movable kidney, showing that the normal bed of the kidney is empty. Percussion of the kidneys in the cadaver is more difficult than in the living subject, and yet he was often able to determine the outlines of the kidney with surprising precision, Skewers driven in to mark the outline corresponded closely to the anatomic outline in the accessible regions which he defines in detail. He commends percussion of the spine as liable to give instructive findings in certain cases, especially percussion in the dorsal zone.

Foreign Body in Peritoneum.—Ronaldo had diagnosed a tumor in the left lower abdomen. Roentgenoscopy and palpation showed the intestines and genitals apparently sound, but the woman confessed an attempt at criminal abortion, and a laparotomy revealed a catheter in the peritoneal cavity, the end projecting into the cavity of the cecum for about 5 cm. The rest of the catheter extending toward the left side was enveloped in omentum. The catheter was easily removed and the inflammatory tumor subsided spontaneously thereafter. If the catheter had been shorter, there is no doubt it would have worked its way entirely into the cecum and have been spontaneously voided by the natural route.

Cancer of the Mouth.—De Vecchis exclaims on the increasing frequency of malignant disease of the mouth. He has encountered himself over twenty cases in less than a year. The extreme rarity in animals, the relative rarity in women, and the increasing prevalence in men all give food for thought. The physician or the dentist who first sees the apparently insignificant lesion, stomatitis, aphthae, leukoplakia, should realize that this is the key to life or death. The dentist should watch out for precancerous lesions and cure them, but beware of inducing malignant transformation by improper treatment, such as cauterizing an ulceration in the mouth with silver nitrate. De Vecchis adds that as cancer develops preferentially in an acid medium, the specific and surgical measures should be supplemented by alkaline mouth washes.

Nov. 6, 1920, **36,** No. 45

*Urinary Sepsis in Children. R. Jemma.—p. 1021.
*Defensive Potency of Serum. M. Gelera.—p. 1024.
*Protein Therapy of Puerperal Infection. B. Bianchi.—p. 1026.
*The Convergence Oculocardiac Reflex. E. Ruggeri.—p. 1029.
Strangulated Inguinal Hernia in Woman. G. Razzaboni.—p. 1034.
Endocrine Organs and Diabetic Syndrome. Castronuovo.—p. 1036.

Nov. 13, 1920, **36,** No. 46

Inguinal Periadenitis of Venereal Origin. L. Morini.—p. 1046.
Chronic Fibrous Bronchiolitis. D. de Conciliis.—p. 1048.
Albumin and Albumose in Sputum. G. Felsani.—p. 1051.
Horizontal Luxation of Patella. G. Piccoli.—p. 1055.
Pathogenesis of Gastric Ulcer. A. Chistoni.—p. 1058.

Septic Infection of Urinary Passages in Children.—Jemma warns that when children have fever for a long time, not to be explained by the clinical findings, the possibility of cystitis or pyelocystitis should be borne in mind before attributing the disturbances to the intestines as is too often done. In a few months a total of 180 cases has been encountered in the dispensary and hospital at Naples and Palermo. With general hygiene and a mostly fluid diet (but not exclusively milk), vegetable purées, egg yolks, hexamethylenamin, changing to salol, etc., the disease can generally be conquered. Local treatment of the bladder may be useful when the cystitis has lasted for some time and the bladder alone is involved. Excellent results have been obtained also in Jemma's service with vaccine therapy. Recurrence is not rare.

Defensive Potency of Serum.—Gelera injected into the rabbit ear washed leukocytes from the guinea-pig peritoneum after induced leukocytosis. Study of the defensive potency of the rabbit serum thereafter showed that its power as a complement is a reliable index as to the reaction of the organism to an infectious process. This index is much more dependable than the leukocytosis figure and the blood count. The complement power throws little if any light on the diagnosis, but it is a valuable element for the prognosis in connection with the clinical even more than with the laboratory findings. The proportion of complement is determined by the amount of leukocytosis and of the consequent leukocytolysis. His research confirms the advantages of seeking to stimulate leukocytosis to reenforce the organism in its struggle against infection.

Protein Therapy in Puerperal Infection.—Bianchi refers in particular to parenteral injection of milk, relating that he gave this treatment a thorough trial in thirty-six obstetric and twenty-one gynecologic cases. He reviews the history and the probable mechanism of its action, and reports that it seemed to promote and accelerate the cure in certain cases and ward off serious disturbances, but when severe puerperal septicemia was under way, no benefit could be detected. Under any conditions the effect did not much surpass that from the ordinary measures, drugs, vaccines, fixation abscess, mercuric chlorid by the vein, etc. But the harmlessness of this milk form of protein therapy, its availability, and its excellent influence in reducing objective and subjective pain and in enhancing the defensive powers of the organism, impose its use on a large scale, he declares, especially during the early stage, when it is most potent.

The Convergence Oculocardiac Reflex.—Ruggeri gives tracings of the pulse showing the marked effect under certain conditions of extreme convergence of the eyes. This is accomplished by having the reclining patient gaze at the forefinger held 1 cm. from the tip of his nose. The pulse was not affected or was increased merely by 3 or 4 beats in

the numerous normal subjects tested. But in 5 patients with polyneuritis from malaria, diphtheria or influenza, the pulse ran up at once by 20 or 30 beats; in 5 with thyroid dysfunction the increase was from 25 to 30. The findings were negative, the pulse growing slower, in bradycardia of vagus origin and in 4 cases of the Bernard-Horner syndrome. In 3 cases of pulsus alternans the response was negative in 2, but was positive in the third case which soon terminated fatally.

Rivista Critica de Clinica Medica, Florence

Sept. 15, 1920, **21**, No. 26

The Roentgen-Ray Findings with Valvular Defects. C. Minerbi.—p. 301. Idem. G. G. Palmieri.—p. 303. Idem. L. Siciliano.—p. 319 in No. 27.

Sept. 25, 1920, **21**, No. 27

*Chronic Acquired Trophedema. G. Garin.—p. 313. Conc'n in No. 29, p. 337.

Trophedema.—In the case described by Garin in a linotype operator of 41, the feet and legs have enlarged until a condition of hard, symmetrical chronic edema became installed in time. The edema does not seem to be influenced by gravity, but it has developed since 1913 in waves of acute increase, with redness and aching in the regions involved. The size and aspect now suggest elephantiasis. There is nothing to indicate polyneuritis, but many features of the case suggest deficient thyroid functioning. This is sustained by the sluggishness of the sympathetic system and the arrest of the progressive process under vigorous thyroid and suprarenal treatment. The clinical picture is that described by Meige, except the lack of hereditary features.

Rivista di Clinica Pediatrica, Florence

September, 1920, **18**, No. 9

*Congenital Hypertrophic Stenosis of the Pylorus. G. Squarti.—p. 513.
*Congenital Deformities and Epilepsy. F. Tavernari.—p. 538.
O. Ferrari's Manual on Pediatrics, 1577. A. Spallicci.—p. 550.

Congenital Stenosis of the Pylorus.—Medical treatment proved futile in the three cases reported by Squarti; necropsy in one and the operative findings in another confirmed the diagnosis of congenital hypertrophic stenosis. The operation came too late to save the two infants treated by gastroenterostomy. The first symptoms rarely appear before the second to the eighth week or even later. The explosive vomiting may occur during feeding and rarely more than an hour or two later. Pylorospasm can be differentiated by the painful vomiting and its attenuation under sedatives, the global contraction of the stomach, the occasional absence of a tumor at the pylorus, the milder course and the aspect of the stools. With the hypertrophic stenosis the stools grow less frequent and smaller, assuming the characteristics of meconium or fasting stools. The statistics as to cures under operative treatment are not dependable on account of the confusion of spastic with organic stenosis, but the lowest mortality recorded, 18 per cent. in twenty-six cases, was realized with the Rammstedt technic. With this the cylinder of muscle is slit longitudinally down to the mucosa, leaving the latter intact, and not suturing. Hypertrophic stenosis seems to be more frequent in boy babies and in the breast fed and the first born. To avoid further irritation while deciding on the preferable treatment, he advises to take the child from the breast and feed breast milk by the rectum.

Congenital Malformations and Latent Epilepsy.—Tavernari argues from a case described in detail the possibility of mechanical causes in the uterus impeding normal development of the cortex and thus being responsible for epilepsy, etc., later. The mother recalled that there had been transverse presentation at her previous deliveries, and this suggests some malformation in uterus or pelvis.

Archivos Españoles de Pediatría, Madrid

September, 1920, **4**, No. 9

*Pathogenesis of Laryngospasm in Children. A. Martin Calderin.—p. 513. Conc'n.
Invasion of the Mastoid in Children. Cristóbal Jiménez Encina.—p. 534.

Pathogenesis and Cure of Laryngospasm.—Martín reports experimental research which apparently demonstrated that lack of calcium is the main cause of laryngospasm, and that the parathyroids play an important part in the calcium metabolism. The convulsions induced by lack of calcium were cured by administering calcium and parathyroid extract. The conclusions from these experimental findings were applied to infants with laryngospasm, the results harmonizing in every respect with those obtained with the animals. He describes in detail the experiences with eight guinea-pigs injected daily by the vein with 1 or 2 c.c. of a 1:1,000 solution of a decalcifying salt (potassium oxalate). The animals all developed convulsions in from three to six days. They were then injected with parathyroid extract by the vein, and the benefit was apparent almost at once, and the cure soon complete. Thymus extract seemed to have a similar but less pronounced action. He explains the clinical sequence as first fat dyspepsia, then disturbance in the endocrine system from the poisons generated by the dyspepsia. The parathyroids and thymus then suffer, and this upsets the calcium balance, and this entails spasmophilia with its laryngeal spasm. Treatment must attack the dyspepsia, supply the lacking calcium, and insure its proper assimilation by parathyroid and possibly thymus extract treatment as in the eight infants cited.

Memorias do Instituto Oswaldo Cruz, Rio de Janeiro

1920, **12**, No. 1. With translations

*Effect on Guinea-Pigs of Bilateral Vagotomy. M. Ozorio de Almeida.—p. 5.
*Certain Brazilian Midges: the Blepharocidae. A. Lutz.—p. 21.
*Helminthologic Fauna of Brazil. IX. L. Travassos.—p. 44; X.—p. 73.
Research on Flagellate Parasites. II. O. Oliveira Ribeiro da Fonseca.—p. 51.
*Prevention of Foot-and-Mouth Disease. H. Marques Lisboa and A. Alves da Rocha.—p. 66.

Bilateral Vagotomy.—The experimental research reported shows that irritation of the vagi induces fatal congestion and edema in the lung, while merely severing the vagi, without irritating them, does not induce this reaction.

Study of Midges.—Seven plates showing 112 separate microscopic views accompany Lutz' study of the blepharoceridae.

Helminthologic Fauna.—Travassos' work is also profusely and handsomely illustrated, especially of the genus *Turgida*.

Prevention of Foot-and-Mouth Disease.—This report of six years of experimental study of this disease in different foci announces that of the hundreds of animals treated with the anti-aphthous serum, excluding those that fell sick within forty-eight hours after the vaccination, protection was absolute in almost 100 per cent. The writers found the average immunity conferred by the disease to be about a year. The shortest period observed was four months, and in this instance the original attack had been extremely mild. The longest period was two years, and this had followed a virulent attack. Calves born of cows that had the disease late in gestation always proved remarkably refractory.

Semana Médica, Buenos Aires

Oct. 7, 1920, **27**, No. 41

*Present Status of Treatment of Pulmonary Tuberculosis. F. R. Torres.—p. 475.
*Infarction in the Liver. M. M. Nebbia.—p. 488.
*Necrosis of Eyelids of Newly Born Infant. P. Satanowsky.—p. 490.
Invagination Simulating Prolapse of Rectum in Infant. J. P. Garrahan.—p. 491.
Antipertussis Vaccine. G. B. Cavazzutti.—p. 493.
Report of Surgeons Commissioned to Study Military Medical Organization in Other Countries. C. Trejo.—p. 494.
*Granulomatosis. A. A. da Matta.—p. 496.

Treatment of Tuberculosis.—In this general review by the professor of epidemiology at Buenos Aires, he reiterates that the treatment of tuberculosis must be eclectic and adapted to the individual case, but always combined with out of door living, repose and extra nourishing food. What we know in regard to immunity and biology of other diseases has very little application to tuberculosis.

Infarction in the Liver.—Nebbia analyzes the pathologic anatomy of the changes in the liver with heart disease, studying the various phases of the cardiac liver.

Gangrene of Eyelids in Newly Born Infant.—In Satanowsky's case as also in Schillinger's and Steffens' cases, a new born infant developed partial gangrene of the lids of both eyes, and diphtheria bacilli were found in the pus. A few

other cases of diphtheric gangrene of the eyelids in infants are on record, but the lids had been affected secondarily in these cases.

Ulcerating Granulomatosis.—Da Matta's study of granulomatosis shows that the prognosis depends essentially on the region attacked. Even extensive lesions on the skin usually heal harmlessly, while the outcome is dubious when the mucosa is involved, and the prognosis is always grave with granulomatosis affecting cavities.

Münchener medizinische Wochenschrift, Munich

Sept. 24, 1920, **67**, No. 39

Rheumatic Lumbago. F. Schultze.—p. 1109.
*Esophylaxis of the Skin in Relation to Infectious Diseases. H. Menze. —p. 1111.
The Mechanism of Calcaneus Fractures. M. zur Verth.—p. 1115.
*Value of Occult Blood Findings. H. Peiper.—p. 1116.
*Rectal Versus Vaginal Examination. Pfleiderer.—p. 1116.
Diagnosis of Smallpox. E. Becker.—p. 1117.
*Water-Wheel Sound over Heart. O. Specht.—p. 1118.
*Roentgen Irradiation of Skin Cancer. Thedering.—p. 1119.
Retention of Placenta After Child-Birth. W. Zanke.—p. 1120.
Enlightenment on Sexual Matters. E. Fried.—p. 1121.
Uricacidemia in Carbon Monoxid Poisoning. G. Czoniczer.—p. 1121.

Protecting Function of the Skin in Internal Diseases.—Menze uses the term "esophylaxis" to designate the protecting function of the skin in respect to the internal organs, and emphasizes that this element in acute infectious disease has not been accorded the attention it deserves.

The Slight Diagnostic Value of Occult Blood Findings with Gastric and Duodenal Ulcer.—Peiper discusses whether occult hemorrhages in the feces are to be regarded as pathognomonic for gastric and duodenal ulcer and for gastric carcinoma; whether in a doubtful case they present the deciding factor; whether they are equal to or surpass in value other clinical symptoms, and finally, whether by serial investigation we can differentiate, from the character of the hemorrhages, between ulcer and carcinoma. He examined fifteen cases of gastric and duodenal ulcer, seven cases of gastric carcinoma, ten cases of cholecystitis, one case of echinococcus infection of the liver, and six cases of hypochlorhydria. Of the various chemical tests he used: Wagner's and Gregersen's benzidin tests, Kuttner's ether extraction test, Snapper's spectroscopic method, and a modification of Kuttner's test, in which benzidin instead of guaiac was used, with which last the best results were secured. On the whole, all the occult blood tests were subject to a marked element of error. One main source of error was the continually changing sensitiveness of benzidin and guaiac. Differentiation between carcinoma and ulcer on the basis of occult blood findings is not reliable. He concludes that, owing to the difficulty in the way of securing an unequivocal demonstration of occult blood, together with existing diagnostic limitations, the occult blood test has no real importance for the surgeon.

Rectal Versus Vaginal Examination.—Pfleiderer cites Jegge (Basel) to the effect that 11 per cent. of 500 puerperae who were examined vaginally presented fever, as compared with only 6 per cent. in a like number not so examined. Jegge therefore recommends that vaginal examination be resorted to only when the external and the rectal examination fail to give clear results. Pfleiderer states then his personal reasons why for years he has restricted vaginal examination to about 5 per cent. of all cases (including both pregnancy cases and others), and why he prefers the rectal examination. From the rectum the whole pelvic cavity can be examined by palpation much better than from the vagina, since the rectum is more roomy and pliable than the vagina. What is especially important, the posterior half of the uterus can, in some cases, be examined throughout its whole extent. Likewise, the broad ligaments of the uterus, the tubes and the ovaries can be palpated vastly better than through the vagina. Even the os uteri can be palpated in an entirely satisfactory manner through the thin and soft wall between the vagina and the rectum. With practice, many of the abnormal positions of the uterus can be corrected through the rectum. By rectal examination he has learned that shortening of the posterior ligaments of the uterus is much more frequent than is supposed and the discomfort from this is often responsible for certain disturbances now ascribed to hysteria. The lessened danger of infection and the fact that the rectal examination is less embarrassing to the patient are other factors in favor of rectal examination.

Bruit de Moulin Following Contusion of the Chest.—Specht reports a case in which, following contusion of the chest, a water-wheel sound could be heard over the heart. On the first examination he could not interpret the peculiar sound. It seemed to be intrapericardial, but the findings could not be harmonized, in all respects, with this assumption. A hematopneumothorax as the inducing cause seemed doubtful. Weil's article on "Mediastinal Emphysema with Water-Wheel Sound," following plexus anesthesia, fell into his hands just at this time, and a reexamination revealed the fact that also in his case the water-wheel sound was of traumatic origin. He cites Reynier's article of 1880 as authority for the opinion that the water-wheel sound is produced by a collection of air and fluid in the "pneumopericardial space." In Specht's case, on auscultation, synchronous with systole and diastole, a loud gurgling, splashing sound could be heard. After the systole, less pronounced sounds of the same type were heard. The regular heart beat was almost entirely obscured. If the patient sat up, the sound became at once less audible and soon ceased, but when the patient resumed the recumbent position it returned immediately. The pulse was regular and strong, 84 beats to the minute. On the fourth day following the accident the sound had disappeared. Specht thinks that Reynier's explanation of the phenomenon is correct.

Roentgen Irradiation of Skin Cancers.—Thedering urges that, in spite of the excellent progress made in the treatment of skin cancer with roentgen rays, surgical treatment be given the preference under all circumstances in which a carcinoma can be removed by operation with a sure prospect of a permanent cure. He thinks it is useless to worry the patient for months with roentgen-ray treatment and burden him with the considerable expenditure of time and money when the knife would relieve him of his affection, painlessly and surely, in just a few minutes. But there are exceptions to this rule. If the surgical removal is not possible without a disfiguring scar, radiotherapy should be used. He emphasizes the remarkable results of roentgen-ray treatment in cancer of the eyelids and lips, which surgery, with all its plastic skill, cannot equal. After irradiation, closure of the eyelids and the lips is almost always perfect; whereas operation usually leaves disturbed relations or disfigurement. If patients fear an operation, roentgenotherapy is the method of choice. The same is true of rodent ulcer, which, when treated surgically, usually requires more or less extensive intervention, followed by skin transplantation; whereas the roentgen rays realize an easy cure with good cosmetic results. In dealing with skin cancer it must be our endeavor to destroy the growth, if possible, at one sitting by a single maximal dose. Partial doses are very dangerous as they may incite the cancer to renewed growth. Therefore only hard rays, passed through a 3 to 4 mm. aluminum filter, may be used. The dose must be at least 40 X; 50 to 60 X is better. Occasionally we may be able to cure a superficial cancer with weaker doses (15 to 20 X), using a 0.5 to 1 mm. filter, but such doses will not suffice if the deeper tissues are involved. It sometimes happens that the superficial cell layers are destroyed, while the deeper layers receive only a partial dose, which incites them to greater activity. It is often better first to irradiate the lymph glands and afterward the cancer proper. Just the reverse of this, unfortunately, seems sometimes to be done.

Wiener klinische Wochenschrift, Vienna

Sept. 23, 1920, **33**, No. 39

Diagnostic Experiences with Induced Pneumoperitoneum. H. Faschingbauer and F. Eisler.—p. 853.
The Pharmacodynamic Cutaneous Reaction. A. F. Hecht.—p. 857.
*Pancreas Disturbances in Dysentery. K. Glaessner.—p. 859.
Technic of Urochromogen Demonstration. E. Klaften.—p. 861.
Physicotherapy. J. Kowarschik.—p. 862.

Pancreas Disturbances in Dysentery.—Glaessner reports his observations, in recent and chronic cases of dysentery, bearing on the demonstration of the tryptic pancreatic ferment. In the stools in acute and chronic dysentery cases it may be noted that albumins are very poorly utilized. Not only meat but also milk albumin and egg albumin often pass through the

intestine entirely unchanged. Glaessner's researches lead him to believe that these disturbances are due in part to the deficient proteolytic action of the pancreas secretion. He regards the findings of partial achylia pancreatica in acute dysentery and complete achylia pancreatica in chronic cases as of importance in the diagnosis and prognosis of dysentery. He thinks it may have practical value to separate into two groups cases of dysentery with and without achylia pancreatica, since in the former cases the prognosis is less favorable. Also as regards treatment the achylia pancreatica must be taken into account.

Zeitschrift für Tuberkulose, Leipzig

October, 1920, **33**, No. 1

*Wounds of Chest and Tuberculosis. Seitler.—p. 1. Id. Frischbier. —p. 7.
*Kidney Disease in Pulmonary Tuberculosis. O. Kieffer.—p. 9. Cont'd.
Phthisis in Native Africans. B. Gruber.—p. 23.
Partial Antigens in Treatment of Pulmonary Tuberculosis. H. Schulte-Tigges.—p. 26.
*Chronic Pulmonary Tuberculosis with Small Foci. G. Bolle.—p. 32.

Chest Wounds and Pulmonary Tuberculosis.—Seitler states that among the 2,359 tuberculous soldiers in his charge there were 33 with a history of a war wound of the chest, but in only 2 of this group had the men been apparently normal before the trauma. Frischbier encountered 83 men with war wounds of the chest among the 6,000 soldiers that were sent to Beelitz for thoracic disease. In 37 cases there has been no sign of tuberculosis since the extensive wound of the chest; in 2 cases a known active tuberculous process in the lung became exaggerated after the injury, but in 46 an active tuberculous process was evident. In a small proportion the tuberculosis had apparently healed since the injury from the projectile. He points to these figures as testifying to the comparatively small share of war wounds of the lung in the development of pulmonary tuberculosis.

The Kidney with Pulmonary Tuberculosis.—Kieffer compares the clinical and necropsy findings in the kidneys during pulmonary tuberculosis in large numbers of patients at the Mannheim hospital for pulmonary disease. The article is continued.

Chronic Pulmonary Tuberculosis with Disseminated Small Foci.—Bolle warns that the roentgen rays impart no information as to the age of the process they reveal; it may be a fresh or an old healed lesion. In cases with a chronic course and scanty symptoms, the roentgen rays may reveal surprisingly extensive lesions. In four typical cases described there was no cough, no sputum, and the temperature was normal or subfebrile. The subjective excellent condition is contradicted by the severity of the disseminated small foci in the lungs, manifestly of blood-borne origin. There is no dyspnea in repose, and the subject is scarcely incommoded by it during effort. There is weakness and severe anemia but no signs of toxic action, and little if any cyanosis although it becomes more apparent during effort. The symptoms were so slight that there was no suspicion of pulmonary tuberculosis at first. The fatal termination came in four and a half and nine months in two of the cases; one patient is still living at the thirteenth month, and the fate of the fourth is not known.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Oct. 30, 1920, **2**, No. 18

Etiology of Congenital Megacolon. R. de J. de Jong and B. P. B. Plantenga.—p. 1773.
Malformations of the Skull and Shape of Orbit. E. Marx.—p. 1785.
*Simultaneous Intra-Uterine and Extra-Uterine Pregnancy. G. C. Nijhoff.—p. 1795.
Advantages of Open Inhaler for Ether. S. Koster.—p. 1804.
Urochromogen Reaction in Typhoid. J. M. Wiggelendam.—p. 1807.

Simultaneous Intra-Uterine and Extra-Uterine Pregnancy.—Nijhoff reports a case in which the tubal abortion and operation had no apparent effect on the normal pregnancy. This proceeded to term unmolested. He cites some cases in which the two pregnancies developed to term, with delivery of the normal fetus and extraction by a laparotomy of the ectopic fetus. Both were 45 cm. long in Bogdanovics' case, but the ectopic child lived only a few minutes after birth. In the case reported by Miller in 1908, after delivery of a boy weighing 2,250 gm. and measuring 46 cm., an ectopic gestation was discovered and a second viable boy was extracted, weighing 2,450 gm. and measuring 47 cm. The mother left the maternity with two living children. Nijhoff thus cites a total of thirty-eight cases of dual pregnancy of this kind, but in fifteen the operation on the ectopic pregnancy was followed by miscarriage; in the other twenty-three the normal pregnancy progressed to term, notwithstanding that in Center's case both ovaries and both tubes had been excised early in the pregnancy. In all these dual pregnancies the intra-uterine gestation was much less manifest than the extra-uterine. Vaginal intervention gave the least favorable results.

Hospitalstidende, Copenhagen

Oct. 13, 1920, **63**, No. 41

Inaugural Lecture of Pathology Course. O. Thomsen.—p. 633.

Oct. 20, 1920, **63**, No. 42

Changes in Fermenting Properties of Bacillus Prodigiosus. P. H. Andresen.—p. 649.

Oct. 27, 1920, **63**, No. 43.

*Chorea Gravidarum. P. Zachariae.—p. 665.
*Present Status of Treatment of Grave Anemias. E. J. Rud.—p. 673.
Begun in No. 40, p. 628.

Chorea Gravidarum.—Zachariae reviews four cases of chorea in pregnant women. Under bed rest and sedatives the course is generally mild, especially when there has been chorea before. The mortality according to the records is from 20 to 30 per cent. but this is too high as the milder cases are not recorded. Some writers have reported good results from salicylate treatment, especially in the febrile cases. Some advocate interrupting the pregnancy when sleep and nutrition are interfered with, especially when there is complicating heart disease or a psychosis. But all warn that labor aggravates the condition as a rule, so that cesarean section is the only choice. It should not be postponed till the woman is beyond recuperating. Evacuating the uterus by no means guarantees a cure; some have even reported aggravation thereafter. In only one of his four cases was there no history of preceding febrile rheumatism and in this case the woman had had pregnancy nephritis twice, so that a toxemic origin seems plausible.

Treatment of Grave Anemias.—Rud concludes from his long study of recent literature on this subject that no treatment to date has actually cured pernicious anemia, but that long remissions have been realized in many apparently hopeless cases under various treatments.

Nov. 3, 1920, **63**, No. 44

*Classification of Types of Gonococci. O. Thomsen and E. Vollmond.—p. 681.

Nov. 10, 1920, **63**, No. 45

Adenoma of Sweat Glands in the Axilla. F. M. Illum.—p. 697.

Different Types of Gonococci.—Thomsen and Vollmond succeeded in differentiating three types of gonococci in twenty-six strains from recent cases of urethritis in men.

Ugeskrift for Læger, Copenhagen

Nov. 11, 1920, **82**, No. 46

*Aesthesioscopia Abdominalis. T. B. Wernøe.—p. 1415.
Striae Distensae in the Tuberculous. K. Hamner.—p. 1420.
Calomel Internally as Introduction to Inunctions. S. Lomholt.—p. 1424.
Status Epilepticus. J. Hasrud.—p. 1426.

Esthesioscopy.—Wernøe has coined this term to express the delimitation on the skin of the areas in which pain is felt or the tissues are tender. His experience has shown that these areas thus outlined are always identical with identical lesions, the esthesioscopy thus revealing characteristic differential findings in location, extent and shape, as he shows by a number of examples with illustrations. The delimitation is automatic. His method is based on the observation that when warm skin is exposed to the cooler air of the room, it blanches, evidently from a spinal vasomotor reflex through the coolness-perceiving nerves. In regions of hyperesthesia, these nerves are more sensitive, and hence the reflex blanching occurs quicker and more intensely. If the abdomen is to be examined, he turns the region away from the light and inspects it from the shaded side. The hyperesthetic region can then be distinctly outlined by the eye, allowing a little time for accommodation of vision and for the reflex to occur.